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Body Conscious Design in Urbanism

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Abstract

This article prompts urban planners to re-think sedentary behavior, specifically sitting in public places, from the perspective of Body Conscious Design (BCD). This form of design considers first and foremost the welfare of the psycho-physical body, starting with its posture, alignment, and movement. Sitting in chairs is a distinctively urban phenomenon. Having increased significantly in response to industrialization, sitting is the primary contributor to sedentary lifestyle, recently identified as a factor that shortens life span. The first section of this paper reviews the anatomical and metabolic problems of sitting in right-angle chairs. The second introduces the working principles of BCD, which can be applied to evaluations of existing furniture and the creation of new furniture. The final section explores resting postures that provide an alternative to right-angle sitting. Meaningful examples in contemporary public urban spaces will be discussed to encourage more thinking and action from both a design and policy perspective.

Keywords: Alexander Technique; Body Conscious Design; public space; sitting; urbanism**.**

Introduction

Sitting is a distinctively urban phenomenon. Prior to urbanization, both agricultural and nomadic peoples were more active and used a wide range of postures (Hewes, 1957). Both industrialization and urbanization have increased people's dependence on sitting in chairs, with urbanites often sitting more than 10 hours a day (Owen, 2017). In their private lives, people sit to eat, read, write, watch television and YouTube, play video games, talk to their families and friends, text and browse the internet. People sit in public life—at work, in transit, in parks, and in restaurants, for example. Urbanites sit both indoors and outdoors.

Sitting is recognized as the foremost contributor to sedentary lifestyle (Saunders, 2011; Owen, 2017). Recently demonstrated to shorten life span, Western-style right-angle sitting (raised off the floor with the legs at a right angle to the spine) also creates muscular-skeletal problems (Mandal, 1985; Cranz, 1998). Clearly, the quintessentially Western practice of chair sitting needs to be changed. However, doing so requires altering the way industrialized and industrializing populations treat their bodies while conducting their daily lives. How is this possible? Individuals can make changes in their personal space, and there are things that people can do collectively in public space. Several of Cranz's other publications focus on what individuals can do to reduce chair-sitting. The present article focuses on what is and can be done in our public urban spaces to think beyond the right-angle chair, to move toward a healthier and more varied repertoire of positions supporting our bodies in public life.

The method of this study is interdisciplinary, drawing on anatomy, anthropology, ergonomics, design, history, and somatics (mainly the Alexander Technique), to assess current types of furniture and supports, so as to recommend options that promote health in public places. The first section presents the anatomical and physiological problems of sitting in right-angle chairs. The second section introduces the working principles of Body Conscious Design (BCD), which can be applied to evaluations of existing furniture as well as the creation of alternatives. The last section explores resting postures other than right-angle sitting, illustrated by significant examples in contemporary public urban spaces, to encourage more thinking and action from both design and policy points of view.

Anatomical and metabolic problems

Most Westerners believe they cannot sit upright for any sustained period without the support of a straight-backed chair. This assumption is simply false however, as Bernard Rudofsky (1905-1988) famously noted: People around the world sit 'autonomously' without the aid of a chair back. Indeed, through personal experience training using the Alexander Technique, Cranz has learned that naturally sitting upright without external support is possible. Nevertheless, although not everybody practices chair sitting, and not everybody needs a chair back, right-angle chairs have evolved as the norm in the West since Neolithic times.

The most fundamental problem with the chair is the right-angle seated posture it enforces. The 90-degree angle between torso and thighs forces the muscles along the back of the thighs to pull the top of the pelvis backward

and the tailbone forward. This movement, unless the sitter has been trained to keep the pelvis upright, flattens the lumbar curve. When standing, humans have an elongated S-shaped spine. The S-shape is stronger for load bearing and designed to hold the weight of our own heads. Maintaining the healthy S-curvature of our spines is desirable, whereas distorting our spines into the more collapsable C-shape (through right-angle sitting) is not.

A serious consequence of using chairs that distort natural spinal curvature is the very painful issue of slipped discs. In between our vertebrae are jelly-like sacs that separate them from one another, hold the spinal column together, and allow for its mobility. Because the lumbar spine curves inwardly toward the organs, slipped discs slip backward where they can press on the spinal cord and the nerves exiting from it, which causes intense pain. In his analysis of slipped discs, J.J. Keegan, an American orthopaedic surgeon demonstrated that the only thing worse for lumbar alignment than sitting in a right-angle chair is sitting with your legs up, extended onto an ottoman or desk, or bending over your lap. Both flatten the lumbar curve even further than sitting at a right angle (1953). Although ergonomics attempts to fix the anatomical problems related to right-angle sitting, researchers in this area tend to work exclusively within the standard right-angle paradigm for chairs. As a result, research into each ergonomic issue attains mixed results and competing research findings and views regarding chair height, lumbar support, arms, and seat angle can be found. This suggests that ergonomics' focus on right-angle chair design is potentially erroneous and that the paradigm itself needs to be rethought.

Furthermore, right-angle chair sitting presents a pervasive and dangerous metabolic problem. Large epidemiological studies published since 2014 show that for every hour that we sit beyond 3 hours daily, the chances of early mortality increase by 11% per hour (Travis, 2011; Saunders, 2011). This is due to the fact that inactivity in the leg muscles tells the pancreas to stop producing the enzyme lipase, which helps the liver process fat, such that lipase levels in a sedentary body can drop by up to 90% (Travis, 2011; Saunders, 2011). Without lipase, the liver cannot break down fat, leading to undigested fats entering the blood. This process creates conditions leading to heart attack, stroke, and cancer—three of the five leading causes of death in the United States according to Healthline (Holland, 2023). Significantly, the correlation between sedentary lifestyle and the occurrence of these diseases is stronger than correlations with age, weight, and even smoking. Perhaps the worst piece of news, however, is that it is *the total number of hours per day spent sitting* that does the damage, which means that one cannot compensate for twelve hours of sitting (the national average according to ErgoTron), by simply going to the gym for an hour (JustStand.org, n.d.).

There is an ironic—and painful—gap between the cultural ideal of sitting straight and tall at right angles and the reality of our slumped seated practice. Nevertheless, people persist with this ridiculous contradiction. *Architectural Graphic Standards*, produced by the American Institute of Architects, for instance, still encourages designers to create right angle seating, even though this advice could be considered unhealthy misinformation.

People insist on sitting and designing right-angle seating but to no avail. In an attempt to stop the inevitable forward slide of the buttocks and thighs that occurs when leading back against a chair back, designers typically tilt the front of the chair seats up. This makes it even harder than it already is for anyone shorter than 5'6" to sit without the flesh under the thighs being compressed—a major problem for over half of the global population. Although such compression decreases blood and lymph circulation, designers have attempted to solve a different problem. Having noticed that it is anatomically difficult to sit at an angle tighter than 90 degrees, designers angle chair backs backward in space, typically by 10 to 15 degrees, to create a more open angle between seat pan and back. Yet, the backward slant of the chair back distorts the neck and upper back. Here is how: if you accept the trajectory of the chair back, your head will extend out beyond the chair back and situate your resting gaze somewhere in the sky or at the intersection of wall and ceiling. This is untenable for work or social situations, or for the simple but delicate act of balancing your ten-pound head on your neck. Accordingly, you will bring your head forward, while the lower spine goes backwards, thereby creating a sharp bend in your thoracic spine, approximately where your shoulder blades are. In time, after years of sitting like this, a spine maligned in this way will become fixed into a dowager's hump. People may say, "Oh well, you have to get old somehow." However, this outcome is not directly related to aging; it is produced by the cultural practice of chair sitting.

Body Conscious Design

BCD takes bodies as the starting point of design. Chairs became the first element of the built environment that Cranz analyzed. Next, she began to identify the principles that would inform her advocacy for BCD. Whereas most design approaches demand that bodies fit into what is provided, without consideration for their anatomical, physiological, and sensory needs, BCD encourages designers to think first and foremost about what bodies need to function optimally and to design the environment accordingly. BCD attends to the biomechanics of bodies, and to the psychological attitudes and cultural beliefs a person brings to their understanding of their body in various environments. Taken together, the experiences of the body-mind-environment become the primary criteria for generating and evaluating design. Over many years, Cranz and Rushton developed a list of working principles that transmit BCD's foundational teachings.

Body Conscious Design:

- promotes whole person health and well-being
- requires somatic education for designers and users
- encourages bodily movement and a variety of postures
- includes all of the senses
- accommodates variety in human shapes, sizes, and abilities
- embraces and insists on choices
- can be subtle or obvious

- defies and confronts design and social conventions
- takes influence from and contributes to both historical and new developments in research, technology, and design
- accepts and celebrates any new aesthetic consequences of truly accommodating bodies

Designers and planners can use these principles as an important frame of reference when they evaluate existing designs and create new ones in all of life's settings: both public and private, for work or play.

Sitting reforms and postural alternatives

BCD can inform people's lives in movement and stillness. Bodies are always interfacing with the built environment, especially when at rest. Furniture is therefore a primary site for manifesting BCD. Indeed, most of Cranz's previous writings focus on furniture in domestic and office spaces, and places of business. The present paper, however, concentrates on applications of BCD in public space.

The epidemiological research cited in the first section indicated that people have a tiny sitting budget limited to approximately three hours per day. Understandably this should be spent carefully, and yet, just how mindful are people when spending their precious allotment of sitting time? And, just how much care do people take in designed spaces over which they have no control? Even though Hewes (1957) has identified over a thousand named postures used by humans globally, the repertoire of positions in the industrialized world is remarkably narrow. People benefit physiologically, psychologically, and socially by integrating a variety of postures into their lives. While moving fluids and distributing muscular effort and mechanical strains throughout their system are the physiological benefits, psychological and social advantages include having a choice of postures, and the freedom to change postures. Moreover, being able to choose a posture means choosing to alter relationships with others. In a small group, for instance, the lower body can turn toward one person, while the face or upper body turns to another. In this way, postural variety can help groups cohere.

In this section, the ways in which furniture and postural reforms can be built into urban public life will be discussed in the context of a wide variety of spaces. Initially, the discussion relates to parks, plazas, sidewalks, and subway platforms, as well as some interior public and semi-public spaces, including airports, office settings, and schools. It will be argued that urban planners and designers should create and implement supports for resting postures that provide an alternative to right-angle sitting. All of the postures and many of the examples cited are suitable and highly recommended for application in other public settings as well.

An excellent prerequisite for introducing BCD into urban design is the trend of creating pedestrian zones. Having the advantage of getting people out of their cars and onto sidewalks and bike paths (Gehl, 2013), pedestrian zones do the groundwork for BCD. Pedestrian zones benefit individuals and, in aggregate, lower public health costs, improve air quality, stimulate urban regeneration, and foster a sense of community and place. This trend also promotes parks, plazas, and sidewalk cafés that animate public spaces and help businesses by increasing foot traffic. New York City's Active Design Guidelines (Lee, et al., 2010), serve as a model for many cities, and emphasize walking in the contexts of work, recreation, and transit. These guidelines also aim to "increase the number of outdoor cafés to enhance street activity," (p. 43) and to "design plazas to include [...] both movable and fixed seating" (p. 34). Our support for these urban movements is tempered by one reservation, however. The proposed park, plaza, and café seats remain problematic in all the ways already described earlier in this article; and should be redesigned to offer a wider variety of postures—stools for perching, bars for standing, chaise lounges for lounging, and rocking chairs for moving while seated. Encouragingly, many English pubs offer a variety of seating and social options that outdoor cafés could adopt to widen their postural vocabulary.

Seating for bodies of all shapes and sizes

A modest and relatively conservative reform applicable to many public spaces is simply to provide different sizes of standard right-angle chairs. If the American Shakers had mama bear, papa bear, baby bear sizes, then why are these not available in public places today? At least three, four, or even five sizes of chairs could be made available. Choosing a chair when entering a public place might even become a source of conversation, and sometimes one might have to sit on the "wrong" sized chair, but with the status quo, chair standardization means most people sit on wrong-sized chairs all the time. As Sara Hendren has shown in *What Can a Body Do? How We Meet the Built World* (2020), designing for the average means no one's needs are met. Hendren demonstrates that averages benefit less than 4% of the population they aim to serve. The average female is 5'3" and the average male is 5'9", so the median average person's height is approximately 5'6"; the height to which standard chairs are designed. Designing for the average means most adults and all children are sitting in a chair that is slightly too high, such that it cuts under the thighs and forces some to dangle their legs, while at the same time, others are sitting in chairs that are insufficiently high, forcing them to crouch their spines into a C-shape in order to fit into the chair.

In Stockholm, it was impressive to see outdoor bars at different heights, just a few centimetres different and with correspondingly different stool heights. Nonetheless, search as she might, Cranz could not find examples of public places anywhere with different *chair* sizes. The English pub is the public space with the most sitting variety—standing bars with a foot rail, tall bar stools, benches, and both wooden and upholstered chairs—a great variety but not usually in large, medium, and small size chairs.

How to sit best in a standard chair

To the sitter who is forced to sit in standard right-angle chairs, here are some guerilla ergonomics tips. On an ordinary chair, put a book on the seat so as to not get cut under the thighs, and to raise your hips—even a few

degrees—above your knees. If you cannot do that, sit at the front edge of an ordinary chair, and drop one leg. You cannot drop two legs at the same time without falling, but you can take turns, dropping each thigh to an angle of approximately 135 degrees. Try it right now. Sit at the very edge of your seat with your torso and thighs at 90 degrees, just like you are supposed to according to *Architectural Graphic Standards*. Next, tune in to the amount of muscle work you are doing at the small of your back; make your own internal measure. Then just drop one of your knees and notice if you feel a decrease in the amount of muscular effort.

Standing

Standing should be part of the repertoire of postures people use in the course of a day. Nevertheless, this is not the surefire way to overcome the negative effects of sedentary behavior. Standing is tiring to the legs, more so than walking, so people should not attempt to stand all day. Hence, beware the hype of the standing desk. One rule of thumb is to stand for 15 minutes out of every hour.

It is uncommon to see people standing around in public, because they are either resting (usually sitting) or trying to get somewhere. Brooklyn-based design firm Pensa made standing a little more likely with Street Charge, a series of public solar-powered charging stations, designed in partnership with Goal Zero and AT&T, which were rolled out across New York City in 2013 and are now available for purchase worldwide (Ridden, 2013; Pensa, 2021). Three tables equipped with charging cables fan out at standing height from around the station's core. This configuration acknowledges the transient activity of grabbing a quick charge while also facilitating social interaction and community-building.

Perching

When astronauts float in space without gravitational force pulling on their bodies, their legs and torsos naturally assume a 120–135-degree relationship. This posture, which NASA calls Neutral Body Posture (NBP), is the result of the balanced musculature of the front and the back of the body. NBP is related to what teachers of the Alexander Technique call the position of mechanical advantage, and what martial artists call "the horse." One is actually stronger in this position than when standing with legs straight. When supported by a seat, this position becomes the perch, halfway between sitting and standing.

Classic sitting puts the torso and thighs perpendicular to one another at 90 degrees; standing creates a 180-degree relationship. Sitting is stressful for the back, and standing is tiring to the legs, but perching halfway between sitting and standing, which puts the legs and torso at a 120–135-degree relationship, offers the benefits of both sitting and standing without the disadvantages of either.

Sit in a chair at right angles and then sit on a high stool with your feet flat on the ground and compare the amount of muscular work in your low back between the two positions. There is an appreciable difference in the amount of muscular work. Perching requires the "percher" to load some body weight into the legs; moreover, keeping these muscles active tells the pancreas to produce lipase, which the liver needs to process fats.

Some public spaces offer perching alternatives to right angle seating, but ironically, they do not do so out of concern for health. Rather, these are defensive designs against unwanted behaviors, such as loitering and sleeping. Leaning bars have recently been installed at some bus stops and subways, including three recently rehabilitated Brooklyn, NY subway stations. They are perching height, narrow, about 5 inches deep, just enough to support the sit bones, but not deep enough nor stable enough to lie down on (Crawford, 2017). Some view these leaning bars as a mean-spirited implementation that prohibits lying down and conventional sitting, but as perches they are much better for the body than standard chairs.

Lounging

If the perch position is rotated 90 degrees in space, the body moves into a lounge position. Lounging, too, is a widely applicable posture, easily incorporated into work and pleasure routines. Similarly, a lounge chair, so long as it bends at the knee, is an excellent alternative to standard chairs.

Lounge chairs are popular additions to public spaces; however, the ones most commonly placed at pool sides, and even those on the High Line in New York City, often fail to create a sufficient bend for the knees to flex. Lounge chairs need to flex under the knees to prevent the lower back from rounding into a C-shape, as it does in a regular chair. Many designers miss this crucial anatomical point, but others have incorporated the flex into their lounge designs. Public Spaces, an Ireland-based designer, manufacturer, and distributor of contemporary street furniture, has an outdoor lounge in wood slats that flexes at the knees. They too believe that the provision of street furniture encourages people to "use the streets, pavements and squares where they live" (Public Spaces, 2022).

Three student projects based on lectures and research are worth mentioning—and building. The first project, in which the balustrades of outdoor descending stairs were shaped as lounge chairs with proper support for flexed knees, would provide the user an especially comfortable view of the events below. In the second, a thesis project, a landscape student at Berkeley reclaimed industrial land in Indiana, and one part of the program accommodated birdwatchers during the seasonal migrations to the north and south. The student installed wood and metal lounges and shaped parts of the land so that birdwatchers, rather than watching birds from a crouched position and thereby straining their necks to look upward through binoculars, could semi-recline to watch the flocks in the sky. In the third project, an assignment to animate public spaces on their campus, Virginia Polytechnic students proposed moulding the soil to create a 135-degree lounge posture in two rings. The inside centrifugal ring would support individuals in group activity and discussion, while the outer centripetal ring would support individuals who want privacy for reading or contemplation while lounging.

The entire form would be covered with grass, contiguous with the lawn.

Finally, at Isla Vista Park in Santa Barbara, designing kindly for human bodies stopped human erosion of an ocean cliff. An ecological problem occurred because people sat on the cliff edge with their pals and six-packs to watch the sunset and unwittingly eroded it. Planners could have put up a cyclone fence to stop the social activity, but instead, they made it more attractive to sit thirty feet away from the cliff edge. They hired sculptor Lloyd Hamrol (b. 1937) and architect Cem Cetindis to design Sea Look Out (1987), a structure that includes a picnic table with benches and a lounge that allows visitors to rest with heads up in order to watch the sun go down, be with friends, and have drinks. Although this lounge does not flex at the knee, it is a positive step toward support the body, and it also protects the earth.

Lying Down

In his research on slipped discs, J.J. Keegan studied the behavior of lumbar vertebrae in different postures. He discovered that lying on your side with the knees slightly bent is the least stressful (1953). This position closely resembles Neutral Body Posture and offers much needed rest for the spine, allowing it to settle back into its natural elongated S-shaped curvature.

Similarly, constructive rest position, lying on the back with your feet on the floor and your knees bent up toward the ceiling, lengthens the spine, opens the rib cage, and gives your organs the space they need to do their best work for you. Lying down in public is something that everyone should have access to, and yet, it remains heavily stigmatized. Culturally, women have an especially hard time since lying down may have sexual connotations. Even though people need rest, lying down in public continues to be discouraged in modern life, both in terms of public policy, and by furniture in public space. Hostile architecture is a case in point as it is intended to make lying down impossible for unhoused urban residents, which precludes it for everyone else as well, even those suddenly stricken by illness or pain. Where lying down in public may be feasible, urban infrastructure is often insufficiently clean or too unsafe to accommodate lying down in a restful way. Those who simply want to rest are assumed to be either homeless, ill, or both.

In 2018, landscape designer Jane Hutton spoke of the (very recent) past, when public benches were purposefully made uncomfortable in order to deter unwanted people (Green, 2013). In New York and other cities, park laws prohibit lying down on benches, and still-contemporary designs that insert metal bands between seating spaces make the law almost unnecessary. Someone with a tired back cannot comfortably rest in a horizontal position on these benches, though many try. The tension between serving those who are unhoused and those who are housed is a recurring problem in urban and public space management.

For the same reasons, lying down in indoor public spaces is no easier. For example, Cranz recalls: “I once laid down on the floor at a bank and was asked by another customer if I needed medical attention. Of course, if I had collapsed from a heart attack or some other medical problem, I would have been grateful for the concern, but I only wanted to rest my spine and had to explain my unusual behavior.” Raquel Meseguer, a UK based theatre-maker, also needs to lie down several times a day, often in public, due to a disc injury that causes her continuing chronic pain. She has reported being treated as both a medical case and a security threat for doing so (Meseguer, 2018). Through her work with Unchartered Collective and A Crash Course in Cloudspotting (the subversive act of horizontality), Meseguer actively promotes lying down in public as a means to rest and challenges the designers and managers of public spaces to change their views toward accommodating and accepting lying down as a necessary part of being in the world. Invitation to Rest, a 2015 project by UK based choreographer and performer Ana Dance, likewise calls on citizens and urban designers to make public spaces more congenial for a wide range of uses, and especially lying down (Ana Dance: Invitation to Rest, 2018).

Airports would be excellent candidates for a project in this kind of design reform, as they are places (at least inside security) generally free from homelessness and serious illness, and where lying down in public is desirable, and even vital to people’s wellbeing. Travelers usually experience some combination of boredom, anxiety, and exhaustion, but airport environments are not often soothing. In a place where long layovers and delays are not just common but expected, is it too much to ask for a comfortable bench or spot on the floor to lie down and lengthen the spine on before sitting in a cramped airplane seat for several hours? When waiting areas get crowded, passengers are especially likely to lie on the floor, and designing airport terminals to invite lying down intentionally would be most welcomed—both by advocates of Body Conscious Design and by weary travellers.

One notable example of a new way to lie down in public is *XXX Times Square with Love*, an installation by German artist and architect J. Mayer H., of three X-shaped lounges on the south-east artery of the X-shaped intersection of Broadway and 7th Avenue that forms Manhattan’s Times Square. The Xs are visually arresting in bright pink and they support Meseguer’s Cloud Spotting, by providing space for at least four people on each X to recline at once. The design does not support flexed knees as a good lounge chair would, but the very low slope behind the back does offer a way to “lie down and enjoy a totally different—and more leisurely—perspective than the bustling plazas of Times Square” (Times Square Arts: XXX Times Square With Love, n.d.).

An effective way for public spaces to show tolerance toward people who need to lie down would be to account for that need in design, by having recognizable places for rest, such as wide uninterrupted benches, reserved spaces, well maintained lawns, and specially textured or coloured floor surfaces. Although slow to take hold, Jane Hutton sees a shift towards more comfortable and relaxing public furniture, which even enables “splaying in public,” a posture once only allowed in the “medical or residential spheres.” She says there’s now a potential for “new positions in public spaces” (Green, 2013).

Squatting

Keegan's (1953) research showed that squatting is wildly better for the lumbar spine than sitting. You might wonder about squatting, because Westerners look down, literally and figuratively, on people who squat. For instance, Cranz has observed that each society that uses squat toilets claims that the practice comes from a less developed (i.e. a less "civilized") country. When squatting, even though it looks like one is flattening the spine, one is lengthening and flattening the whole spine proportionately, and the tailbone can drop without compression. Although culturally stigmatized, squatting is anatomically superior to sitting.

Like lying down and standing, squatting is a posture that often does not need furniture to support it. If you can squat (which unfortunately many Westerners cannot due to the predominance of chair sitting in our culture and our corresponding lack of floor-based activities), you can literally squat anywhere: on a corner while you wait for a traffic light to change, in a restaurant while you wait for a table, on a park lawn. Squats are not just for yoga class. And while furniture is not necessarily required for a good squat, social tolerance and acceptance is. Westerners look down on people who squat, but this misguided collective judgment needs reform because squatting is so good for the body.

Furniture for squatting can be especially useful for people who are not experienced squatters and who are still building the core strength, and the mobility in their knees, hip flexors, and spines that is required to enter, maintain, and exit a squat safely. Short little bench-like structures that support the sit bones between approximately 4-12" (10.16-30.48 cm) high could be among the furniture options offered to squatters.

Sometimes a building base or windowsill has a ledge that can be used for supported squatting. For example, Equinox Fitness on Greenwich Avenue in New York City has a low concrete ledge on which folks can comfortably rest their sit bones in squats of varying depths, as the height of the ledge varies according to the slope of the sidewalk. This ledge is a remarkably popular place for gym-goers to stop and squat on their way into or out of the gym, and for others who simply like to enjoy a green drink from the smoothie shop inside. Whether ad hoc or intentional, this alternative public seating enlivens the sidewalk outside the establishment.

Movement

Human bodies have evolved over thousands of years to move from place to place, to hunt and gather, not to sit around all day. Since every posture entails its own strains, movement shifts and distributes the strains throughout one's body, thereby making each strain less strenuous.

When life forces us to sit all day, we have to find ways to move somehow. A current workplace rule of thumb is to stand 15 minutes per hour and sit the rest of the time, punctuated by walking to the drinking fountain, toilet, photocopier, conference room, etc. Practices like this may appear unproductive; however, the increased circulation of blood, lymph, and oxygen throughout your body (and especially to your brain) that moving around produces will actually improve cognitive functioning and support us in our work and our life. Some have urged combining productivity and health by organizing walking meetings (Merchant, 2014). Architecture itself can respond to the need for walking meetings, as at Bell Labs in New Jersey where interior corridors were designed for four people to walk abreast in a meeting.

Furniture and other kinds of equipment can get people to move as part of their work. Pedal-powered charging stations can be used indoors or outdoors. The design firm WeWatt has built device charging stations that fight "the sitting disease by giving people energizing exercise in their daily life while traveling, working, meeting, reading or just relaxing," and they "self-power people by turning human kinetic energy into usable power" (WeWatt | Human Powered Bike Furniture, Pedal Table, Cycling Desk, 2021).

Rockers invite users to move, not only at home, but also at work and other public spaces, like airports. Champ Land and his wife Jean, co-owners of Troutman Chairs in North Carolina, have provided Kennedy Rockers to over 40 airports all over the United States since 2009. This rocker proliferation followed a 1997 exhibition called Porch Chairs at the Charlotte Douglas International Airport in Charlotte, NC, which featured actual rocking chairs as props (Dzieza, 2014). The rockers caught on for precisely the reason they would seem an unlikely addition to airport terminals: airports are not generally relaxing places. These chairs have the added benefit of being modular, allowing sitters to move them close to power outlets and to make their own social configurations (Dzieza, 2014).

For the outdoors, design studios Lateral Office and CS Design collaborated with EGP Group's engineers to bring back a childhood playground favorite. Impulse is a participatory installation of 30 interactive seesaws in Montréal's Place des Festivals (Gragert, 2015). When the seesaws are activated by people who push them up and down with their legs and feet, they emit light and sounds, enabling people to interact with nearby seesaws to produce one-of-a-kind light and musical compositions (Gragert, 2015).

Moving distributes physiological effort throughout the body and also offers choice regarding the next posture. Choice offers psychological benefits as well as physiological benefits; people typically feel better about situations over which they have some control.

Choice

The Norwegian architect and chair designer Peter Opsvik has often suggested that "the best posture may be the next one" (Opsvik, n.d.). We need to be able to change our posture periodically and regularly. And this means we need choice built into our environments. Built environments should be designed to allow people to choose their positions from a variety of offerings. Choice should be offered in many different settings.

For a plaza in Rome, Urban Movement Design co-founders Sarah Gluck and Robyne Kassen, both trained in architecture and yoga therapy, designed Unire/Unite (2012), a 40 meter long "ribbon of seating" that blurs the lines between bench, park, and play and enables 66 different positions—including yoga poses. (Gerfen, 2012; Green, 2013). The different postures and stretches one can take in the installation challenge the 90-degree seated posture many people assume all day every day, and "activate, strengthen, cleanse, and balance the mind and body" (Green, 2013).

Root Bench (2018), designed by Seung Joon Lee, Hyeok Jun Dong, and Seongmin Moon in Seoul, Korea, is another excellent example of how a public outdoor seating installation can accommodate multiple postures. The designers explain that the nearly 100-foot diameter installation that looks like a system of roots "functions perfectly as furniture with three different heights: child chair (250mm), adult chair (450mm) and table (75mm)" (Sierzputowski, 2018; (Lee, Y.J., n.d.). At the same time, it reflects natural processes: the computer-generated mathematical algorithm that created the design came from the diffusion and transformation rates of chemicals over a surface in space; and the structure itself is "fused into the grass [to] blur. . . the boundary between artificial installation and natural environment" (Lee, n.d.).

These examples serve to challenge and inspire designers, and especially planners and policymakers, to evolve from arbitrary seating standards and defensive designs, and to make public space more body friendly. While possibly daunting to imagine and implement, such changes are possible. Further, furniture designs like Root Bench and the earlier mentioned Sea Look Out inspire us to believe that by paying more attention to the needs of our bodies, we can also become attentive and responsive to the earth that allows us to be here in the first place.

Conclusion

Perching, lounging, standing, lying down, squatting, movement, and choice offer alternatives to right-angle sitting that can help us free our bodies from behaviors regulated by sedentary culture. Redesigning furniture and other surfaces that we contact with our bodies requires collective permission to use new postures and new rhythms of rest and work. This in turn will require reconceptualizing good manners (civility), respectful attention in schools, and workplace etiquette. Furniture that offers choice and movement will go a long way toward improved health; however, general education is essential to explain the need for these reforms and how to navigate them. Through design and education, we can change laws, rules, management policies, and social conventions to evolve a new culture that supports people moving and changing their postures for improved health and well-being.

The benefits of Body Conscious Design reforms are personal, social, and even ecological. Individuals benefit from improved physical health, and psychologically by an increased sense of well-being, improved productivity, increased educational attentiveness, feeling connected to others and to a place. Communities benefit by being experienced as such. Retail businesses benefit from the stop and go of tourists window shopping on foot, and city budgets benefit from improved public health and decreased medical care. Further, when people tune into the needs of their own bodies, they tend to be more empathetic with the needs of other people, animals, plants, and natural environments. Body Conscious Design can help cities become sustainable because the benefits—improved well-being, decreased medical care, improved work productivity, increased educational attentiveness—serve the entire social system.

Urban life can be changed by individuals, by groups, and by institutions within a society, all of which change culture more generally. Having read this chapter, you now have some basic tools for making these changes. We invite you to use them, and to advocate for the body, and for Body Conscious Design, in urban life.

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