GLOBAL POSTURE STUDY

Steelcase

THE STEELCASE HUMAN-CENTERED DESIGN PROCESS

Understand	Observe	Synthesize	Realize	Prototype	Measure
U >	**O** >	**S** >	**R** >	**P** >	**M**

The **Steelcase Human-Centered Design Process** is a simple, but rigorous, approach to research, analysis and design development that puts human beings and their needs at the core of all we do. It is grounded in the social sciences and uses a variety of anthropologic and ethnographic techniques.

The Global Posture Study and all Steelcase research projects follow six steps.

In the **Understand** phase, we conduct secondary research to assimilate essential information, language, and trends about the subject.

The **Observation** phase involves going into the field to observe people in their environment to see how they behave in real life and to discover latent or unrecognized needs. Researchers document what they see using photography, videography, sketches and field notes.

Next, we **Synthesize** our findings, looking for patterns of behavior, to gain insights about the situation and develop design principles to help solve identified problems.

In the **Realize** stage we generate a wide variety of ideas for potential solutions and concepts are visualized.

Next we **Prototype** our concepts to determine if the idea is viable. Rapid prototypes are developed to refine ideas, leading to full-scale prototypes which are built for rigorous evaluation.

Finally we **Measure** the performance of prototypes and they are refined, tested and evaluated to yield solutions that are smart, desirable and viable.

SUMMARY:

TECHNOLOGY IS THE SINGLE GREATEST FORCE DRIVING THE CHANGES IN THE WAY WE WORK, LIVE AND BEHAVE.

The multiple devices we deploy throughout our work day allow us to flow between tasks, fluidly and frequently. And the user interface of these technologies are increasingly intuitive and responsive to the gestures of the human hands and face.

But what about the interface between the rest of the body and the place in which the device is being used? What about gesture recognition for the human body?

While our technologies have continued to advance, no one has designed for the impact of these technologies on the human body, or for the physiology of how work happens today.

Until now.

THIS GLOBAL STUDY
was conducted by Steelcase WorkSpace Futures
researchers and the Steelcase Design Studio.

2,000 PEOPLE

11 COUNTRIES

Belgium
Canada
China
France
Germany
Japan
Malaysia
Netherlands
Russia
United Kingdom
United States

KEY INSIGHTS:

New **technologies** combined with new **behaviors** have led to **NINE NEW POSTURES** that are not adequately addressed by current seating solutions. There are ergonomic implications to these postures that, if not addressed, cause pain and discomfort.

What we discovered is that new technologies demand new ways of moving and working.

The **physiology** of today's new technologies and their impact on the human body has greatly been ignored. Much of today's seating was designed to support the very traditional one-task, one-technology, one-posture experience. With today's multiple devices, our body is forced to respond to these small technologies, leaving much of the body unsupported.

The **sociology** of work has changed. Work is an inherently social process that requires people to rapidly shift between individual, focused tasks and creative collaboration. Each new activity causes us to change postures. Generational and gender differences also impact our posture preferences.

1. THE DRAW
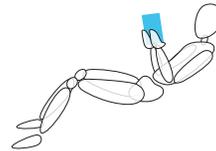
2. THE MULTI-DEVICE
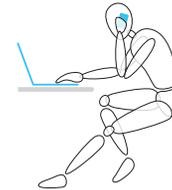
3. THE TEXT

4. THE COCOON
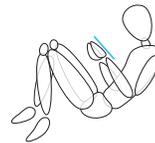
5. THE SWIPE

6. THE SMART LEAN
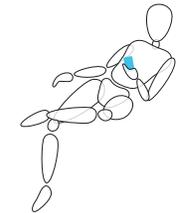
7. THE TRANCE

8. THE TAKE IT IN
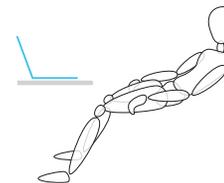
9. THE STRUNCH
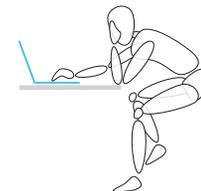
9 NEW POSTURES
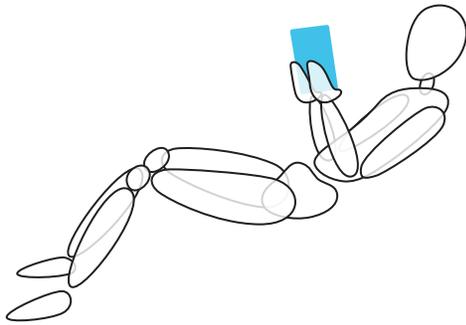
1. THE DRAW

As tablets become more common in the workplace, people are adapting to the devices by changing their posture.

This is a posture born of tablets. While using the technology, people need to key, view content, and gesture on the screen.

The technology (small and mobile) allows people to pull back from their desks while they use it. They recline, signaling they're contemplating or absorbing information and draw the device closer to their body to maintain an optimal focal length.

People will bring their elbows close to the body to stabilize their arms, which can become fatigued if holding the device for longer periods of time without arm support. Also, if their chair does not offer persistent lumbar support in a reclined posture they will experience back pain.
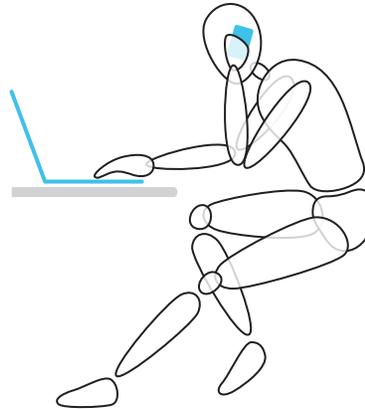
2. THE MULTI-DEVICE

People do not use one technology throughout the day. They blend devices to effectively perform their work. As people blend devices, their posture must adapt and become more complex.

This posture is representative of how people adapt to multitasking on multiple-devices. One hand holding a phone to the ear, the other tasking on a laptop. The result is a forward lean that is a symbol of concentration and an orientation to the smaller screen of a laptop.

This posture is typically caused by sitting too far away from work. Chairs that are not (or cannot be) adjusted properly exacerbate the issue because they collide with the worksurface, don't offer adequate arm support, or do not allow reclining while maintaining sight lines to computer screen.
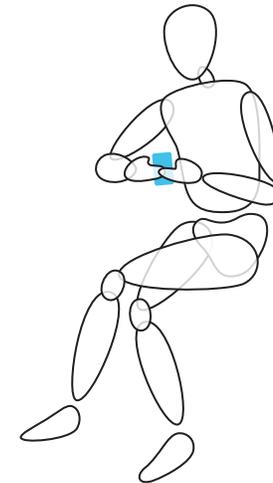
3. THE TEXT

Texting is a frequent activity for many workers throughout the day. Texting can take place virtually anywhere from shared conference rooms to dedicated workspaces.

Smartphones are small compared to other forms of technology and, therefore, require unique postures. Workers bring arms in close as keying and gesturing are performed. Also, putting a smartphone on a worksurface actually makes it harder to use, so it is a device entirely supported by the user's hands and arms.

In many instances texting is a short lived activity. However, as smartphones have become more powerful, the duration of use is getting longer. If smartphones are used in longer durations without arm support users will experience shoulder strain. Also, if the device is not elevated to a natural sight line neck pain is inevitable.
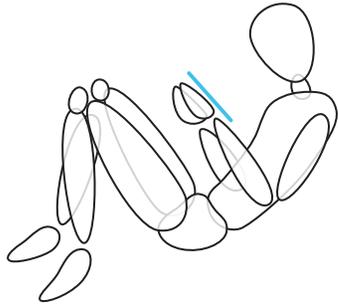
4. THE COCOON

Generation and work-culture have profound impacts on posture. We have noted that both of these variables are contributing to a more casual work environment.

This posture is more commonly seen among Gen Y workers. Gen Y is notably the most casual generation in the workforce. However, this posture is not just about being casual—small mobile technology allows people to remain productive in this posture. A person can recline, bring up their feet to a sitting height, and draw their smartphone or tablet close. The result is a cocoon.

This posture, like so many others, is comfortable for certain people for a range of duration. For most, this is not a posture that is feasible for a long duration. The bend in the knee can reduce circulation in the legs, the neck is angled down to view technology, and the lower back is typically not supported. The cumulative effects of this posture are discomfort for a majority of people.
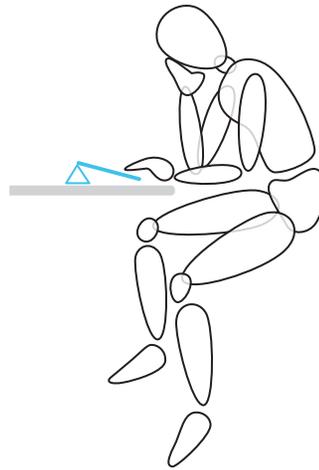
5. THE SWIPE

Tablets have revolutionized the technology industry and are gaining popularity in the workplace. Tablets are easy to use and increasingly more powerful. Most workers still have a primary technology (desktop or laptop) but many rely on tablets for a portion of their work.

People either hold a tablet in their hands or place it on a worksurface. This posture results when the device is used on a worksurface in "surfing mode", in which people operate the device with one hand, typically with swiping gestures. Because it's on a worksurface, a person must keep their head a certain distance above the tablet in order to see it, and position their head to look down at it.

When a tablet is used without additional tools like a keyboard or elevated display, people will inevitably hover over the screen and lean forward. If this posture is held for along duration it will cause the user back pain. Also, if the arm is not supported the user will experience shoulder strain. Lastly, a sharp downward neck angle will result in neck fatigue and ultimately pain.
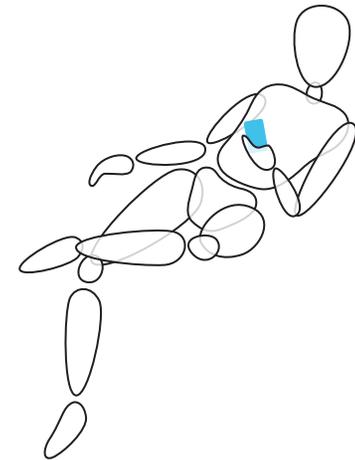
6. THE SMART LEAN

Smartphones are with us all day. They provide us consistent access to the world while at the same time provide the world access to us. People frequently receive information on their smartphones while among coworkers in shared environments. In some cases the information is private. Rather than leaving a meeting or seeking privacy people choose to lean to the side to shield their content from others.

This posture is the result of mobile technology and the desire for people to temporarily "pull away" from others without leaving a meeting or collaborative environment. This is typically a temporary posture and used for glancing at incoming texts or e-mails.

If only a short-lived posture, symptoms are typically not felt. However, the posture can be better supported with a chair that offers greater lumbar support and arm support that allows technology to be raised to the user's natural sight line.
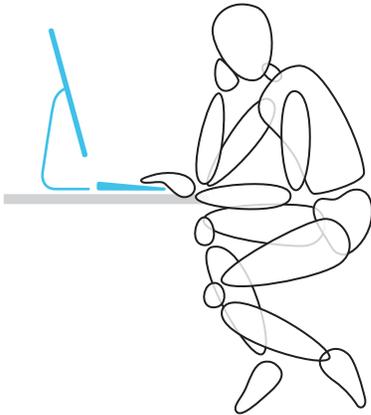
7. THE TRANCE

Mousing and key pads allows us to navigate through great deal of digital information and perform work. When deep in our "zone", people tend to ignore their posture and focus only on the task at hand.

This posture was observed when people were focused on the screen and either mousing or using a touchpad to navigate on the screen for extended periods of time. This is a long duration posture.

People lean toward the screen, straining their necks forward, and as they become fatigued they will rest their head on one hand, to stabilize it and take pressure of their back/shoulders. As they lean forward, many people will unconsciously place their feet on the chair base to relieve pressure on their thighs. Reclining while remaining oriented to work can greatly reduce the negative impacts of this posture. Properly placed armrest will alleviate the strain on the shoulders, arms, and wrists.
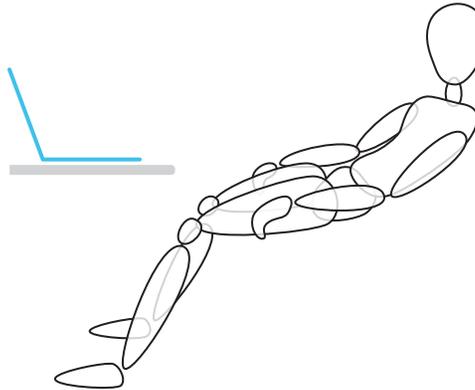
8. THE TAKE IT IN

In many cases technology is getting smaller. However technology is also getting bigger (ie high resolution desktops). Bigger displays allow people to view digital information at a distance without eye strain. Also, casual work environments are accepting of reclined postures that support contemplation.

In this posture people recline to view content on the large display and/or sit back to contemplate. This posture is about "taking in" information rather then generating it.

This posture is a healthy way to sit if the chair offers lumbar support in a reclined posture.
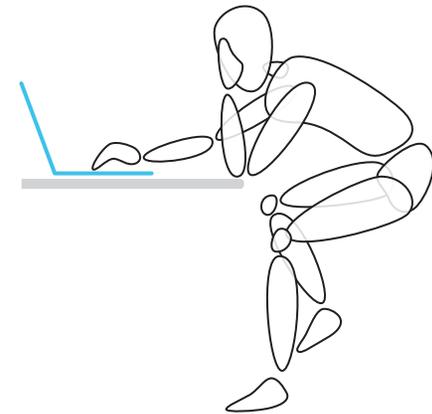
9. THE STRUNCH

Many workers are mobile and carry their office with them in a backpack. They don't always have the tools they need for intense tasking. Other workers depend exclusively on laptops to conduct their work even in dedicated workspaces. Intense sessions of work are common.

The "strunch" (stretched-out hunch) is a very common posture with laptops. As people become fatigued, they gradually push their laptop further from the edge of the worksurface, which causes them to reach for everything. Since the back and neck cannot sustain the reach and hunch posture for a long time the person begins to prop themselves up with their non tasking arm.

Because this posture is synonymous with long duration sitting, it puts people at a high risk for discomfort and over time back, arm, wrist, neck, and shoulder injury.

Most seating perpetuates this posture and the negative ergonomic implications. A chair that allows users to pull up closer to their work would alleviate much of the issues associated with the strunch. A reclined posture with proper lumbar support is another alternative and improvement to hunching forward. This offsets the strain and pressure on lower back and distributes it across the entire back region. Lastly, a chair with arms that provide support even in a reclined posture is essential to any interaction between worker and technology.

WE OBSERVED:
People are in Pain

BECAUSE THESE NEW POSTURES ARE NOT ADEQUATELY SUPPORTED, WORKERS ARE UNCOMFORTABLE, IN PAIN, AND DOING LONG-TERM HARM TO THEIR BODIES.

Technology helps productivity, but pain disrupts our work – our ability to concentrate and be creative.

WORKERS TODAY:

Hunch forward to see laptops and small devices– the body follows the eyes. Slumping leads to disc compression, excess pressure on the neck and strain on the back and shoulders;

Leave the arms without support when conducting precision tasks like mousing. Unsupported arms leads to unnatural twisting of the wrists, hands, elbows and shoulders and causes excess pressure on the shoulders;

Decrease blood flow in the legs by sitting in positions for long durations that cause misalignment of the spine;

Have no respite: Because we are always "on" and use our devices anywhere, anytime, we have no respite from uncomfortable postures, which compounds the problem.

INTRODUCING GESTURE™.
Designing a new sitting experience.
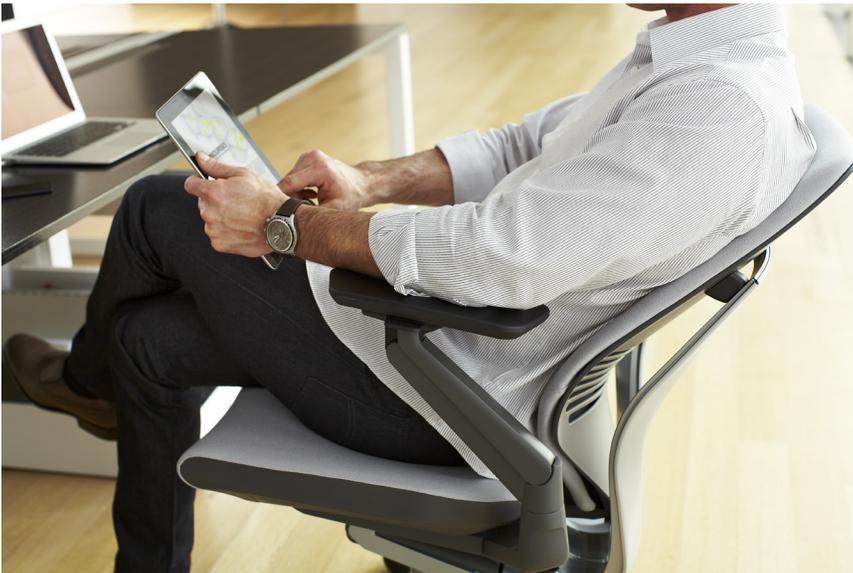
WE DIDN'T START WITH A CHAIR DESIGN, WE STARTED BY LOOKING AT MOVEMENT IN THE HUMAN BODY. THIS INSPIRED OUR DESIGN PHILOSOPHY:

Encourage movement: movement is natural and healthy for the body and mind. Gesture encourages fluid and dynamic motion throughout the sitting experience.

Strong core with flexible perimeters: like a healthy body, Gesture has a stable core to provide support, and flexibility to allow a broad range of motion.

Systemic approach: all major parts of Gesture move in harmony to support posture shifts. This creates a fluid, natural motion that encourages movement.

Realized performance: a well-designed user interface makes it easy and intuitive to use. It unlocks the mystery of ergonomics and eliminates the complexity of ergonomic adjustment.

SYSTEMIC INTERFACES

When we studied the full range of postures—new and existing—we studied three key interfaces between the human body and their chair:

The Core Interface

The Limb Interface

The Seat Interface

The range of posture is broad and diverse—especially the limbs that reach far forward and back.

Core

Limbs
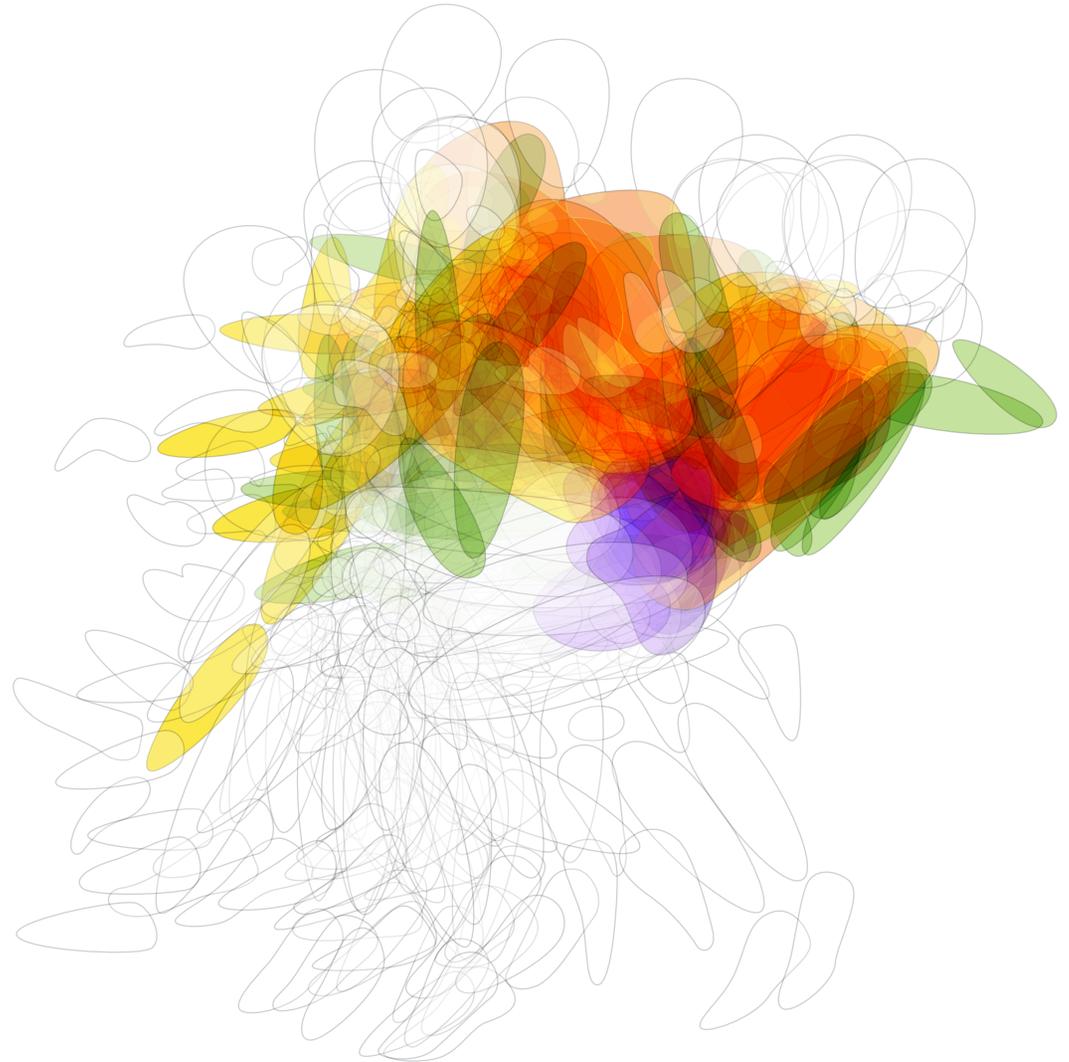
Seat

GESTURE'S THREE PRIMARY INTERFACES

1 **THE CORE INTERFACE:**

Our body is a system in which the back and legs are synchronized in movement. Like the human body, Gesture's back and seat move as a synchronized system that creates a tailored fit, moving with each user to provide continuous and persistent lumbar support.

2 **THE UPPER LIMB INTERFACE:**

Gesture's arm moves like the human arm, which helps people to get closer to their work and supports their arms and shoulders, no matter the device they are using. Gesture's arms are mounted behind the hip to support a wider range of postures and people.

3 **THE SEAT INTERFACE:**

The contoured seat distributes weight to make it comfortable longer. It is flexible at the perimeter to allow a range of postures without pinching or cutting off circulation. The seat depth control is responsive, and makes it easy to "fine tune" so people are less likely to perch on the edge of their chairs.
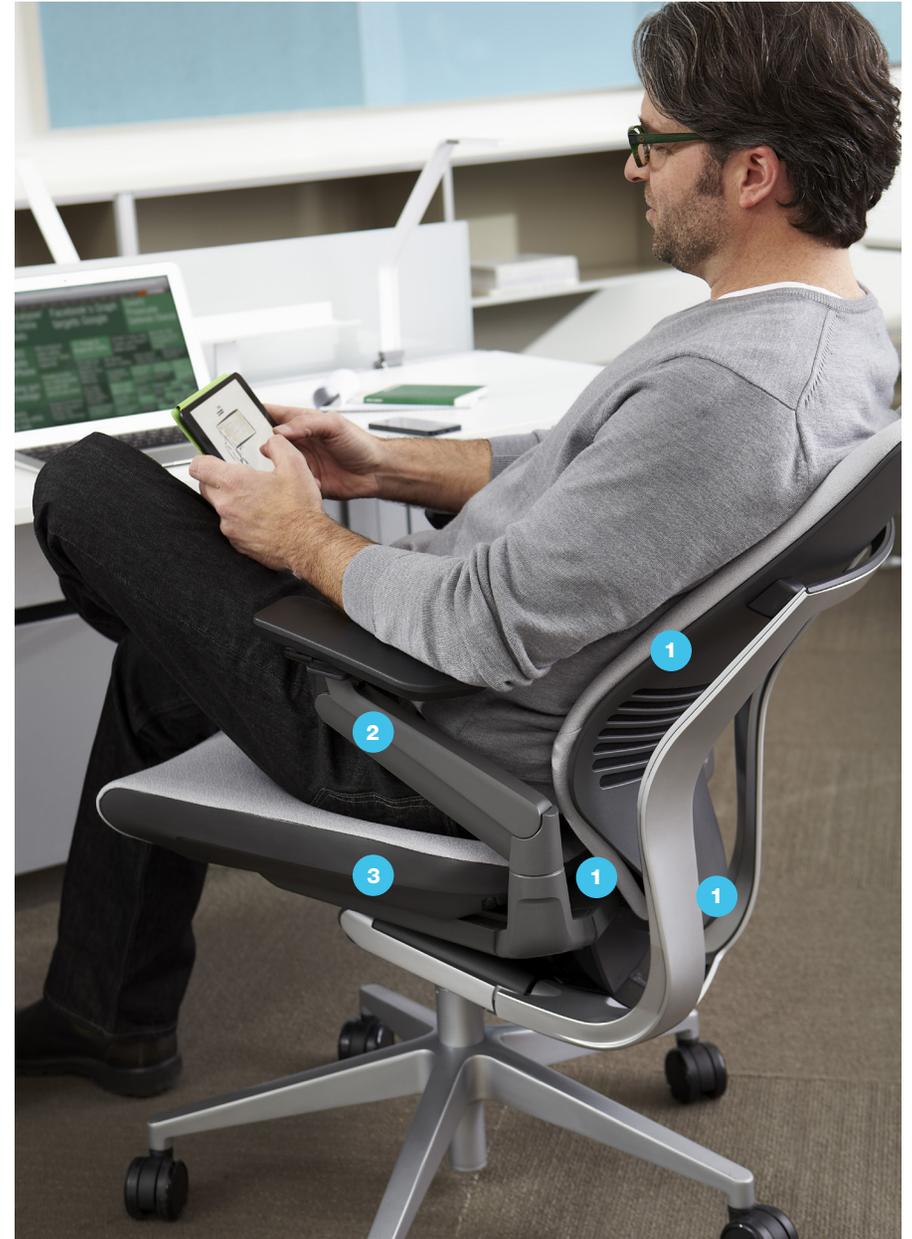
GESTURE

Designed for the interface between user and technology.

Inspired by the movement of the human body.

Created for the way we work today.