The Alexander Technique in the world of design: posture and the common chair

Part I: the chair as health hazard

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Abstract This article presents a critique of what may be thought of as the Western tradition of chair sitting and chair design. It begins by summarizing five principles of the Alexander Technique, which are applied to the problem of chair design. The surprisingly weak physiological and kinesthetic basis of chair design is described, raising the question of how and why the chair has become so important. To answer this question a brief history of chair development is presented. Part I concludes that the representation of social status has distracted chair designers and users alike from designing chairs for physical well-being. On the basis of this critique, Part II develops recommendations for body-conscious furniture and interiors. © 2000 Harcourt Publishers Ltd

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This article[1] explores the intersection of somatic practices and design, the arena of body-conscious design. And as the title suggests, it does so primarily through the author's association[2] with the system of posture and movement developed by F.M. Alexander at the

[1]This paper was first presented as a keynote address at the 44th Annual International Conference on Design at Aspen in 1994, the theme of which was 'Body and Environment.' It has been edited and substantially rewritten for publication. For more complete and detailed discussion see Cranz (1998).

[2]The author's knowledge of somatics as a general field comes chiefly through experience with the Alexander Technique, first in 1978 as a pupil, then

Footnote 2 (*continued*)
as a trainee, and finally as a teacher, certified in 1990. In addition, she has experienced and benefited from several other somatic disciplines including Rolfing, the Feldenkrais® Method, Rosenwork, Hellerwork, Trager, Mind-Body Centering. Older traditional Asian systems share with somatics the view that body and mind are part of a system: the author has practised tai chi chuan daily since 1976, practiced yoga intermittently for 17 years, experienced 2 years of jin shin and 24 years of acupuncture as a client.

The author came to the Alexander Technique because of the back pain suffered as a result of rotatory scoliosis, a sideways curve in the spine. One

turn of the last century.[3] This system is one of several disciplines of mind-body integration which Thomas Hanna (1980) and Michael Murphy (1992) have called somatic practices, and within it lies the basis for a general critique of certain aspects of Western culture and design, including the way we sit.[4]

The author is in her professional life a professor at a school of architecture, a sociologist specializing in social factors in design. Through the years, and partly as a result of her experiences with the Alexander Technique, she has developed a further specialty in the subject of the 'near environment.' This is that part of the environment that is close to the body, where the body and the

physical world come into contact, often through touch. This potentially broad topic is narrowed here away from clothing and tools to furniture, and specifically the chair, where we spend so much of our waking life.

This article presents a critique of what may be thought of as the Western tradition of chair sitting and chair design. It begins by summarizing the Alexander Technique, which is then applied to the problem of chair design, its basis (or lack of basis) in physiology and kinesthesiology, and its history. On the basis of this critique, Part II develops recommendations for body-conscious furniture and interiors.

The Alexander Technique

The Alexander Technique was developed by an Australian, Frederick Mathius Alexander, at the end of the nineteenth century. F.M. Alexander, was a young Shakespearean reciter who found that he lost his voice after every performance. When he could find no doctor who could remedy the condition, he undertook his own investigation.

Alexander discovered that when he addressed an audience he moved his head backwards and downwards to achieve dramatic power. This resulted in undue physical pressure on his neck and larynx. He found that he could relieve this pressure by freeing the connection between his head and neck — the Atlanto-occipital joint. As a result, Alexander lost his laryngitis; moreover, his voice became so powerful and attractive that people started coming to him for voice lessons. In time he even became known as 'The Breath Man.' Eventually, a doctor asked Alexander to see if his technique could help a woman patient with a back problem. It did, and thus to

this day the Alexander Technique has two chief applications — performing arts and physical therapy.

However, today teachers of the Alexander Technique do not refer to its effects as either therapy or performance art. They call it 'kinesthetic reeducation.' The prefix 're' is intentional; it implies that children have excellent 'use,' which is lost over time as a result of socialization processes. Note here that teachers of the Alexander Technique avoid the word 'posture.' Use is something different; it implies movement over time, a pattern of coordination, whereas posture connotes a static, fixed position. Furthermore, use is mental as well as physical. Thus, in this paper the term 'use' means overall, coordinated use of the body, working in concert with thought (Alexander 1932).[5]

According to the principles of the Alexander Technique, when people in contemporary Western society are young, they use themselves correctly. Thereafter, they lose good use at differential rates, depending on their particular culture and family influences. Children have excellent use, which means that their neck joint is free so that they are able to initiate motion with their heads, while the back lengthens and widens simultaneously (Alexander 1996; Leibowitz & Connington 1990). Why are adults' and children's use typically so different? Is this an inevitable aspect of maturation? To the contrary, this article assumes that use is shaped by culture, including family, class, and shared mores and technologies. It argues that chairs are an important medium for shaping, and distorting,

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Footnote 2 (*continued*)

orthopedic reported that the general rule of thumb would be to expect this condition would get a degree worse every year. According to these prognostications, by now she might be in a wheelchair, since she *started* with a curve of 80 degrees. But through the Alexander Technique she has managed to straighten her spine. She has X-rays to prove that the curvature now measures in the 67–70 degree range. Rather than getting a degree worse, the condition has on average has become a degree better every year that she has practised. But this would seem to imply that the progress has been even. In fact, the impact has been much more dramatic. When she decided to train to become an Alexander Technique teacher, going to class four days a week, her spine straightened about 13 degrees in 9 months. This experience has obviously given her a strong physical commitment to the system. However, her engagement also became intellectual when she realized it contained deep philosophical implications about what it means to be a mind and to be a body. These implications eventually led her to rethink chairs and the practice of sitting on chairs.

[3]For summaries of Alexander's influence on intellectual thought, including the work of John Dewey, Aldous Huxley, Nikolaas Tinbergen (1974), see Jones (1976) and Maisel (1986).

[4]Recently in this same journal a Rolfer, Myers (1998), also noted the need for teaching 'the seemingly simple acts of sitting, walking... and altering our local environment to suit our bodies' and wished for more ergonomically designed seats.

[5]Feldenkrais® term for active posture, acture, also seeks to distinguish the difference between static and dynamic use of the body.

the body. The practice of chair sitting is responsible for having undermined good use in numerous ways.

The next two sections of this paper enumerate the ways in which, and explain how, chairs distort the bodymind. To start, the major physical and intellectual principles of the Alexander Technique are summarized here (McDonald 1989) as they relate to problems of seating and chair design.

1. The head/neck/back relationship

The scientific basis of the Alexander Technique is that all vertebrates initiate action with their head, a physiological observation first demonstrated a century ago by Sherrington, the UK neurophysiologist. The first thing a person learns when one sets out to study the technique is to 'let the neck be free so that the head can go forward and up and the back can lengthen and widen.' This single concept, called 'primary control,' provides the focal point of the system (Alexander 1932). Organizing the head and neck should come first, and then corrections in, for example, pelvic balance; hip, knee or ankle joints will follow. Conversely, disorganization at the head-neck joint will ricochet through the rest of the body. Any chair design that puts people in a posture that distorts this joint upsets the equilibrium of the entire body. Too many chairs do interfere with 'primary control.'

Chairs interfere with primary control in many different ways, but one distortion is extremely common. The right angle seated posture usually rotates the pelvis backward, flatten the lumbar curve, and throws the entire spine into one large c-shape. In order to see a person's eyes will remain horizontal, so while the spine changes, the position of the

head does not, which means that the joint between the two is distorted. Specifically, all the cervical vertebrae including the first cervical vertebrae extend forward, while the weight of the head comes back and down, rather than forward and up, in relation to the neck (Fig. 1). The problems that flow from this pattern include back ache, neck ache, problems with vocal production, eye strain, sciatica, shallow breathing. Alexander teachers and pupils might be able to avoid these particular problems because they learn how to sit on their ischial tuberosities without letting the pelvis roll backwards. However, the pull of muscles from the back of the thighs around the buttocks to the pelvis is at work even if one is skilled enough to resist it. The right-angle seated posture is intrinsically stressful to the lower back.
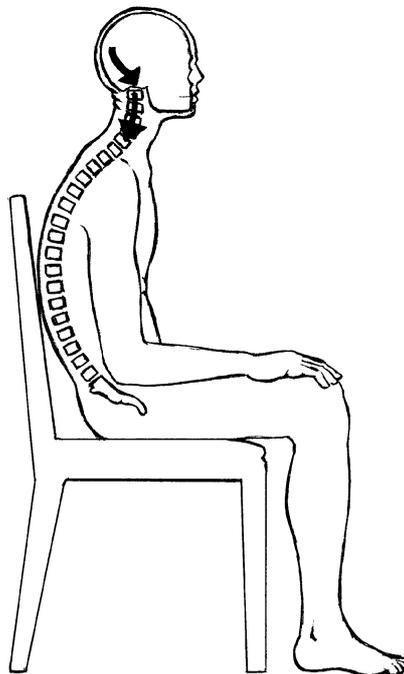

Fig. 1 The right angle seated posture encourages slumping, and, in order to see while slumped, the head rotates back in relation to the top vertebra, exerting a downward pressure on the spine. Drawing by Don Jacot.

2. Recognition of the force of habit

The fact that people move in a way that is largely habitual means that they are largely unconscious of this aspect of their lives. As a first principle, then, the Technique therefore asks people to acknowledge that they will have a difficult time changing their habits. Simply learning *cognitively* that 'there is a better way' is not enough. Repetition, vigilance and a teacher — someone outside one's subjective pattern — are necessary to change a lifetime habit. For chair design this insight means that while better chairs can help create better habits, hardware alone is not enough to change bad habits like slumping or tensing. 'Software' and hardware need to evolve together; a new level of physical education should yield a new demand for a new range of chair types. That is to say, when more people become educated somatically speaking they will want chairs that do not impose distortions and chairs that facilitate upright postures and more movement.

3. Acknowledging that we don't know what feels good

One reason chair designers design so many crazy, different chairs is that subjective measures of comfort are extremely unreliable. This is another way of saying that people do not know what comfort is. One person can say what he thinks is comfortable, but invariably it will be different from what someone else thinks; and, furthermore, what a person says is comfortable one day will not necessarily be what the same person says is comfortable the next. As an alternative to the frustrations of trying to find a subjective measure, many ergonomicists would like to find an objective measure. However, objective measures may not relate to the experience of

comfort. In the end, the ergonomic literature about the subject of subjective and objective measures of comfort has not been able to achieve consensus (Leuder 1983).

Alexander had a term for this effect: 'debauched kinesthetic awareness.' The term refers to a person's inability to tell what is going on in his or her own body because years of improper use have made it impossible for him or her to read internal feelings accurately. The baffling variety of experiences of comfort ergonomic researchers encounter may not be as mysterious as they think. The author submits that years of sitting in chairs have contributed significantly, perhaps immeasurably, to this problem because chair sitting distorts use, hence reduces kinesthetic awareness, including perception of comfort. The good news is that because people have *developed* faulty sensory awareness, they can also develop accurate sensory awareness by re-training themselves. (People who have so trained themselves', Alexander teachers and other somatic practitioners, would be good evaluators for chair designers and others in the furniture industry; they are an untapped resource.) This means educating people about chair use, not only physical design.

4. Sending directions

The Alexander Technique maintains that the body needs and will respond to mental concepts from the brain. In order to override distorted sensory perception, a normative standard, derived from scientific analysis of correct movement, is necessary to guide action. We cannot rely on the body to move correctly on its own. But neither is force necessary; simple thoughts serve as powerful and effective guides to action without force. While chairs cannot think or send directions, they can interfere with

people's ability to sense and to carry out correct directions.

5. Inhibition

Learning 'inhibition' has nothing to do with a Freudian notion of inhibition; it has nothing to do with the idea of being emotionally or sexually repressed. To the contrary, it is the idea of noticing, of bringing patterns to awareness and recognizing that conscious decisions can be made in relation to them. Specifically, a person can 'say no' to letting his or her head compress the spine back and down, that is, inhibit a habitual response. One inhibits interference and 'lets' the reflexes that make us an upright species takeover; sometimes this is called 'non-doing.' Here contemporary practitioners of the Technique find resonance with Zen philosophy, although Alexander allied his work exclusively with scientific reasoning. From the vantage point of the Alexander Technique, when people try to 'do' something, they narrow and compress. But the opposite is not to give up caring to the extent of slumping and collapsing and losing precious volume. Rather, non-doing involves being alert and in the world, acknowledging desire and interest in things, and yet not 'narrowing' or 'grasping.' The head neck joint has to be freed in this non-doing way. Any chair that distorts the poise of the head and spine creates stressful movement rather than the stressless, reflexive ease of non-doing.

The flawed nature of chair sitting and chair design

In the space here one cannot recount all the evidence that shows from a somatic, or even an ergonomic, point of view how physiologically harmful chair sitting is.[6] However, the flawed dynamics of chair sitting and chair design are illustrated in

the following series of images. The first photographs show an Alexander teacher sitting up in three different positions on the edge of a chair. Paradoxically, when a person leans back (Fig. 2), a forward force results because sitting down and leaning back inevitably pushes the pelvis forward. There is an inherent contradiction in our desire to sit up and lean back at the same time. Of course, the difference between a chair and a stool is the back; but if one uses the very thing that separates a chair from its more lowly cousin, one eventually comes to the awkward realization that one is in, literally, an impossible position.

Figure 3 shows that when the teacher wants to stop the sliding forward she can bring her head into line with the seat. If she brings her head forward, she also has to bring her upper body more forward. The result is that she increases the c-shaped, caved-in position of her chest. Her last option, of course, after she slumps all the way down (Fig. 4), is to sit all the way up again at the front edge of the seat (Fig. 5). (Unfortunately, many chairs seats including this one have a fairly sizable cant to them, that is, they are tipped fairly far back, making it hard to sit on the edge.) The average person will tire sitting upright at the front edge and scoot back into the seat for back support. And so the cycle begins anew. This argument about the inherent instability of the seated posture is sound, but only up to a point, because an unspoken cultural bias is built into it. The assumption is that it is too tiring to sit upright without support. Why do we need support? Because our muscles are weak — and why are our muscles weak? They have
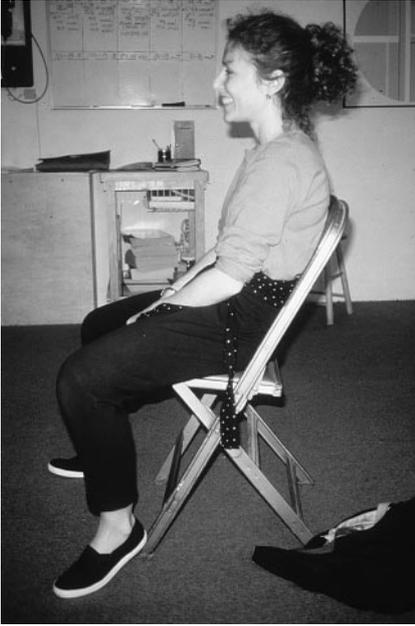

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Figs. 2–5 An Alexander teacher demonstrates the so-called 'inherent instability' of the seated posture.

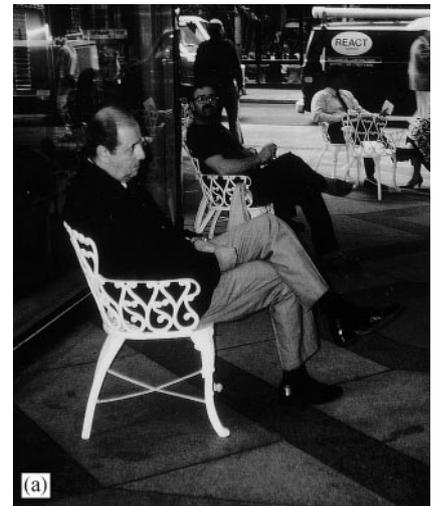sitting in the chair in a way that is culturally acceptable. Nevertheless, a thoracic hump is slowly building into his body, and when he is old, the deformity will most likely be erroneously attributed to age.

Sitters and designers have used several strategies to stop the forward movement of the pelvis. The man in Figure 6 had his legs crossed in order to keep himself from sliding forward. But the chair designer could also have canted the seat up in front to stop the tendency. One can see this strategy employed in many chairs today. However, the price of this choice is that the chair then jams the hip joint. To compensate for that problem, designers open the back further so the hip joint is not too compressed. But widening the

Fig. 6 (A & B) The chair itself causes back problems.

become weak because we sit and lean back in chairs!

Not only do chairs weaken, but also they distort our bodies. For example, here in Figure 6 is a chair from the AT&T lobby in New York City in 1988. But notice that the poor man seated in it 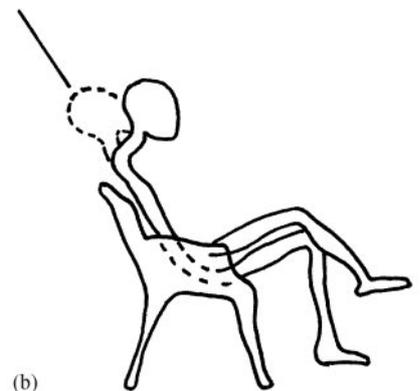is leaning on the chair back, creating a trajectory that is diagonally backward. If the man followed that trajectory completely, his head would be behind the chair back! He cannot do that because it would place a tremendous stress on the neck. So he brings his head forward, and his spine bends about mid-thorax to curve forward. Clearly the man is

seat-to-back angle makes a problem for the neck, and to relieve strain on the neck one must bring one's head forward. This then collapses the ribcage over the abdominal region and exaggerates the curve in the midback.

Obviously, the alternative is that a designer can run the chair back all the way up the shoulders and support the head. But then he or she will have created something different: a lounge chair, or a chaise longue. If the designer wants to create a chair, narrowly defined as supporting the classic right-angle seated posture, he or she will be forever chasing the problem of instability throughout the body. Designers notice the sliding-forward problem, so they cant the seat up. This creates a problem in the hip joint so they compensate by opening the angle of the chair back. But this creates problems in the neck which people solve by drawing their heads forward and collapsing their chests. To look up at others with the neck so drawn forward rotates the head back and down, interfering with the primary control described earlier. In addition, chair sitters absorb some of the problem in their ribcage. This is where our culture and our designers now leave the problem. Examples do exist of chairs that let the problem stop at other points along the way. But the current cultural norm seems to be to chase the problem through the body until it comes to rest in the neck and ribcage.

More condemning evidence regarding the futility of scientific chair design comes from some casual snapshots. They were taken in the mid 1960s by a friend in the UK who had done Voluntary Service Overseas in Upper Volta (now Guinea); and the author noticed the people in Figure 7 had fairly normal range of bodies — thin, fat, tall, short — a wide variety but no one remarkable. In contrast,

one beautifully developed man in Figure 8 stood out from all the rest. His head is erect, he has a deep chest, his head leads forward from his spine, and his back is back. His shoulders are not pinched forward in a scholarly stoop or held back in military excess; they drop to his sides over this deep, fully developed torso. Only one other person was so well developed. When the author

commented on the magnificence of these two her friend said, 'Well that's funny,' (knowing nothing of the author's interest in chairs), 'the two that you picked out are the two that grew up in villages without missionary schools so they didn't have tables and chairs.'

This comment stimulated the birth of a hypothesis: chair sitting itself has caused the back problems

Fig. 7

Fig. 8

Figs. 7–8 Upper Volta, now Guinea 1965–66. The man with excellent physiological development never sat in chairs as a youth. Photo by Helen Lightowlers Giovine.

of Western mankind. Perhaps chair design does not have a rational basis. The contradictions intrinsic to the right-angle seated posture of leaning back and down at the same time simply doom designers to forever chasing problems through the body. Until Western culture confronts these intrinsic contradictions and looks for alternatives to chair sitting, designers will not be able to resolve these problems.

Even in Western culture children's use is as good as the African man's. And of course, even in the West, not everybody loses good use; we have the examples of Mohammed Ali, Arthur Rubenstein, Fred Astaire or Michael Jordan, people we call 'naturals,' to point to as people who have kept good use their entire lives. But, by and large, throughout the twentieth century posture, regard for posture, has deteriorated. Starting in the 1920s, slumping became fashionable and has remained so. Modern chair designers assume that we do not care about anything as old-fashioned as posture, and so proceed without regard for the body. When they do take the body into account it is to express the symbolism of being care free, posturally speaking, and to support its literal collapse.

A brief history of chairs

If only some cultures use chairs, and if chairs are a health hazard, then one has to wonder why and how they originated in the West. By way of an answer one can trace chairs back through history for over 9000 years. Archaeologists know that the highly developed civilizations of ancient Egypt and Mesopotamia built and used chairs as far back as 2850 BC. Much less well known are finds from southeast Europe from the Neolithic era as old as 7500 BC. A seated female was also depicted in Catal Huyuk in Turkey around 7000

BC. Figure 9 shows 2-inch kiln fired models of such chairs with full figured females reclining in them made by Neolithic people of the former Yugoslavia. No one knows exactly how far back the practice of chair sitting goes. No chairs were depicted in cave paintings anywhere around the world, so chairs may or may not have been invented in the Paleolithic societies of 40 000 BC.

The earliest types of chairs were the throne and the clismos (Fig. 10). The throne distinguished the ruler, who sat elevated and upright, from all others. These early thrones were in use throughout Mesopotamia, Egypt and Crete. The early dynasties of ancient Egypt depict right-angled thrones but in the later dynasties (1362 BC) the seat pan and pack are both curved. The Greek clismos had an inclined back for domestic use, usually by females. The two chair types, throne and clismos, were maintained in Rome, but Romans used beds far more than either kind of chair for

most activities — sleeping, entertaining, reading, writing, and even eating.

Chair use seems to have died out during the subsequent, so-called Dark Ages. But it was slowly reinvented during the medieval period, initially as a place only for the king to sit. Many images from this period in Europe show a king seated in a chair while everybody else stands or sits on the floor or on stools.

Toward the end of this period and the beginning of the Renaissance a new type of chair evolved in Europe from the storage chests that were common in medieval halls. Such chests were common in feudal times because people moved around in response to political instability or administer diverse lands. The need to pack up on a moment's notice meant everything had to be kept in storage chests, which were then kept around the edges of the halls, and people used these chests for sitting. This new type of 'chair' is easily

Fig. 9 Clay figurine of seated females. Source: Staneva BN 1975 **Zaminech**. Sophia, USSR (author's transliteration). These figures are also shown in photo and drawings in Gimbutas M 1988 **The Language of the Goddess**. Harper, San Francisco, a more accessible publication than the Bulgarian language archaeological reports with no ISBN from which this illustration is taken.

Fig. 10 The Greek Clismos.

interpreted as a box with a piece of wall attached to the back (Fig. 11).

To speed the discussion, we will jump a few centuries, from the Renaissance to the eighteenth century. It was at this time that the American architect and historian Allen Greenberg (1977) claims the chair reached its peak of integration, because refinements for the sake of comfort were coherently resolved from a formal point of view. The nineteenth century then added padding and spring upholstery and developed an interest in historical styles. And this is in turn led to a revolt by designers in the late-nineteenth and early-twentieth centuries. The first chairs of that time to reflect the 'modern' sensibility of expressing structure without upholstery were the Thonet chairs that used steamed and bent wood. The reader may recognize them today as cafe chairs (Fig. 12).

The twentieth century has largely been concerned with experimentation in the areas of manufacturing processes and materials. Even when upholstery has been used, as in the case of the famous Barcelona chair of Mies Van der Rohe, the central preoccupation remains with what a designer can do with structural systems and new materials, in this case steel in an eloquent x-shape (Fig. 13). One could also point to Breuer's Cesca chair, inspired by bicycle tubing (Fig. 14). In such objects is a sculptural fascination with combining different materials, for example, how leather and metal pipe can be joined. This has been a

consistent theme in twentieth-century chair design, combining traditional materials like rattan and wood with 'modern' industrial materials.

One can see that this all has very little to do with the body. And, in fact, this is precisely the author's thesis: that the twentieth century was not body conscious in terms of furniture making. Chair designers in our time have been more concerned with experimentation in such areas as wood lamination, plastic molding, steel forming, inflatable plastics and, of course, combining these materials in interesting ways. Most designers probably love twentieth-century chair design, but most of these twentieth-century innovations are physiologically disastrous. They cut under the thighs, force the sitter to slump, spill him out or make it difficult for her to get up, etc. . To take one common example, many designers adore Eames and Saarinen plastic chairs (Fig. 15). And these are undoubtedly tours de forces from a technical point of view. But they are also disasters from the point of view of the human body. Chairs of this type with the one piece mold for seat and back provide no space for the gluteus maximus — a person's buttocks. Sitting in this chair, one's pelvis cannot help being pushed forward. One will end up sliding out of the chair no matter how one tries to use it. A fascination with materials and sculpture has
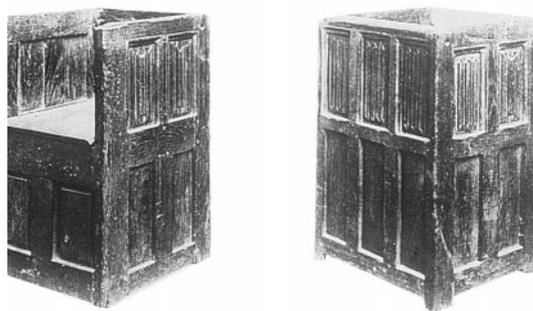

Fig. 11 One type of medieval chair evolved from storage chests

Fig. 12 The Thonet cafe chair, steamed and bent wood.

Fig. 13 The Barcelona chair by Mies van der Rohe, steel and leather upholstery, 1925.

Fig. 14 The Cesca chair by Breuer, bent metal tubing and rattan, 1924–25.

Fig. 15 The Tulip, molded fiberglass pedestal chair by Saarinen and Eames, 1956

overridden concern for the well-being of the body. Similarly, our times have also seen a preoccupation with stacking and folding chairs. This only provides further evidence of twentieth century chair design's primary concern with experimentation and technology.

From this brief overview of chair history we can draw the conclusion that status has been consistent theme in chair development and use. The importance of social standing has distracted chair designers and users alike from the issue of designing for the welfare of the body. Designing chairs for status display may have been harmless when people sat on chairs only for special occasions. But now that people sit on chairs all day their legacy as vehicles for the expression of status has become physiologically harmful.

Part II will consider how to improve chairs and will explore alternatives to chair sitting in interiors for work and home.

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