

This is the pre-peer-reviewed version of the following article: Peter Wilkin, Are you sitting comfortably? The political economy of the body. *Sociology of Health & Illness*, 31 (1) pp.35-50. 2009. © 2009 The Author. Journal compilation © 2009 Foundation for the Sociology of Health & Illness/Blackwell, which has been published in final form at <http://dx.doi.org/10.1111/j.1467-9566.2008.01111.x>

Last updated 12-03-2007

Word count (excluding abstract):

8247

Draft Paper

Not for citation

‘Are you sitting comfortably? The political economy of the
body’

Abstract

‘Are you sitting comfortably? The political economy of the body’

The aim of this paper is to examine the relationship between the mass production of furniture in modern industrial societies and lower back pain (LBP). The latter has proven to be a major cost to health services and private industry throughout the industrialised world and now represents a global health issue as recent WHO reports on obesity and LBP reveal. Thus far there has been little by way of coordinated attempts to deal with the causes of the problem through public policy. Drawing upon a range of sources in anthropology, health studies, politics and economics, the paper argues that this a modern social problem rooted in the contingent conjuncture of natural and social causal mechanisms. The key question is: what are the appropriate mechanisms for addressing this problem? The paper develops an analysis rooted in Libertarian social theory and argues that both the state and the market are flawed mechanisms for resolving this problem. The dilemma for Libertarians remains, however. Whilst the state and the market may well be flawed mechanisms they are the dominant ones shaping global political economy. What argument might a libertarian make in response to this?

‘Are you sitting comfortably? The political economy of the body’



Diagram 1. A teenager relaxing¹

Introduction

The aim of this paper is to examine a global problem, namely: lower back pain (LBP). LBP is defined as pain in the lumbo-sacral region, buttocks and thighs. LBP affects more than 70% of the population in core capitalist states, accounting for 13% of sickness absences in the UK. This is a trend that is increasing. A global estimate says that the costs of LBP are substantial with one study suggesting it is as high as 1.7% of GNP of a core capitalist state. US researchers estimate that 80% of the world's population suffer from LBP at some point in their lives, though for varied reasons (Speed 2004: 1119; Guzman et al 2001: 1514; Hills 2006).

LBP's have become a major concern for capitalism with, for example, a recent UK government report noting that the cost to British business each year from days off work due to back pain (by far the biggest single cause of workplace absenteeism) was around £5 billion per annum. 85% of lower back pain in the UK is classified as being 'non-specific back pain' meaning that it 'results from postural and mechanical stresses on spinal and paraspinal structures (Speed, 2004: 1120).' It is this type of LBP that is the primary focus of the paper.

There is also some medical opinion that LBP in part reflects an evolutionary weakness in our spines (Kranz, 2000: Chapter one). In short, the back itself is a bad design. This is a major problem in that the lower back provides structural support and bears most of the weight in our body and in the loads that people carry (Medicinenet, 2005). However, it seems reasonable to argue that whilst there is a tendency for the back to generate particular health problems, these must be understood as occurring in the context of particular

social conditions that structure our work and leisure time. Historically, some social groups have not and still do not suffer from widespread LBP (Kranz, 2000: chapter one). The logical conclusion, then, is to search for the social factors that when combined with the genetic weaknesses of the back have the potential to cause LBP.

My argument is that this a modern social problem rooted in the contingent conjuncture of natural and social causal mechanisms. The paper aims to fill a gap in the existing literature which tends to take one of two forms: either medical analyses that concentrate on the treatment of the condition but with little to say about its social causes; or governmental responses that tend to concentrate on either limited general advice about posture and how to pick up objects correctly or health and safety legislation to encourage the use of ergonomic furniture in the office. Whilst much research mentions the changing patterns of work and leisure little has been done to situate this in any broader theoretical framework so far.

In this paper I will set out the nature of the problem and the ways in which the market, social policy and state regulation in the world system have sought to deal with it so far. The modern world system should be seen as a construction of European political, economic and cultural power from the C16th onwards. This brought with it a range of institutions, values, beliefs and practises that have spread unevenly throughout the world system. Not the least of these has been the gradual cultural acceptance of the chair and sedentary lifestyles as symbols of a 'civilised culture' (Elias, 1978). Just as European states built the modern economic and political system to reflect their own interests and power

so to they have attempted to disseminate many of their cultural practices as being both universal and the embodiment of a modern culture.

Three social causes of LBP in the modern world system

In explaining the rise of LBP I will examine three major social causes of the condition. Each of these causes is related to the expansion of the modern world system and the projection of European political, economic and cultural power (Wallerstein, 2004).

1. The symbolic power of the Chair and taste in the modern world system

Symbolically the chair has assumed widespread social importance in the culture of the world system for reasons that I will examine. Historical anthropological studies have noted the comparative absence of LBP in societies where chairs are or have been largely absent or limited and this leads to important conclusions. In a number of Asian countries the tradition of the right-angle seat has had a limited history and there tends to be lower incidences of LBP (Clark, 2002). Ironically, it is the spread of modern, mass produced furniture combined with increasingly sedentary lifestyles that has helped to generate the LBP's that are common features of life in the core of the world system (European Agency for Health and Safety at Work [EAHSW], 2000; National Institute for Neurological Disorders and Strokes, [NINDS] 2006).

2. The impact of state regulation, industrialisation and standardisation in the world system.

The consequence of this has been to transform work and domestic life into largely sedentary experiences that when combined with the use of furniture whose design exacerbates the weakening of these key back muscles leads, ultimately, to LBP's (Mandal, 1976: 157-174). Industrialisation and the standardisation of design in furniture production are deeply rooted structures in the world system and continue to shape social and work life.

3. *Capitalism as a system for the production, distribution and consumption of furniture.*

Capitalism has helped promote the very furniture that causes LBP's and which, in turn, costs capital in lost labour time. I will conclude by examining some of the recent ways in which corporations, European governments and US cities have been using social policy as a means of changing furniture production to minimise the likelihood of LBP's in schoolchildren (EAHSW, 2000). There has been a wealth of literature on the health problems caused by furniture design but far less on the social causes (Lueder and Noro, 1994). However, I would argue that much of this impressive research, even within the ergonomic field, is based around the idea of coping with sedentary lifestyles rather than addressing how and why they have come about and what alternatives there might be.

Social Policy and the Good Society

Ultimately, a successful solution to these health problems raises important political questions about the good society and how people want to live and work. The key question here is:

What are the best means for transforming the design, production and use of furniture?

Answers to questions of social policy can be situated at either a more libertarian or a more authoritarian end of the political spectrum (Guerin, 1970). In traditional Western political theory there are two main answers to the above question, both of which claim as their goal the enhancement of human freedom:

1. Through the state regulation of production.
2. Through the power of consumer choice in the capitalist market place.

The extent to which it is possible for existing social institutions to make the necessary changes is unclear but I would argue that political programmes advocating the state and the capitalist market as mechanisms of social transformation lend themselves towards authoritarian solutions where largely unaccountable political and economic bureaucracies attempt to shape patterns of production and consumption. As I will show, for those committed to a more libertarian society neither of these is likely to be a satisfactory response to the problem and both of them have partial views as to the meaning of human freedom.

Instead, the most libertarian (and I would argue the way most commensurate with the natural human need for freedom) way of dealing with this problem is through the self-management of the workplace and society (Edgley, 2000; Rucker, 2004). Such a system would enable the needs of producers (workers)

and consumers to be met in ways that would most fully realise the libertarian goal of a free, democratic and humane society. Unfortunately this is also the most difficult solution to implement as it would require a fundamental transformation in social relations. The appropriate response for those concerned with this issue is to find a variety of ways to work towards this goal, whilst dealing with the institutional and structural factors that cause this particular social problem. This may be a frustrating answer for libertarians but it leaves open the possibility of promoting a variety of libertarian solutions at the local, national, regional and ultimately global level. I will say more about the practicality of this in the conclusion.

A design for life?: Naturally bad backs

‘British business loses an estimated 4.9 million days to employee absenteeism through work-related back conditions each year, with each affected employee taking an average of 19 days off work, according to the latest figures from the 2003/2004 Labour Force Survey...The charity BackCare meanwhile estimates the overall cost of back pain – to the NHS, business and economy – at £5bn per year.’

Health and Safety Executive Press Release E077:05, 2nd June 2005.

LBP's are rife in the world system, particularly in those areas where work and leisure have moved from largely active practices to sedentary ones. 75 per cent of all workers in industrialised societies now have sedentary jobs, and this figure is increasing in many countries (Reinecke and Hazard, 1994: 157). This is a trend synonymous with the spread of industrial and consumer societies over the course of the C20 and has been linked with a number of other social

and health problems such as obesity. Recent work by the World Health Organisation has shown that physical activity has been in sharp decline in many parts of the world system, a significant cause of increasing levels of obesity and LBP. According to the World Health Organisation (WHO) there are now more than 1 billion overweight adults worldwide, with at least 300 million obese people. This is spread throughout the world system and is not just a problem of the rich core states. Indeed it is developing more quickly in the periphery and the semi-periphery where newly affordable fast food carries a high social status value equating to affluence (WHO, 2003; Sklair, 1991: Chapter five).

What happens to the back that causes these injuries to occur? Biomechanics is the study of the mechanics of a living body, especially of the forces exerted by muscles and gravity on the skeletal structure (Kroemer, 1994: 181). In physiological terms the injuries are due to the deterioration of the muscles and ligaments around the lower back, pelvis and stomach that are weakened by both a sedentary lifestyle and the structure of modern furniture (Pheasant, 1996: 59; Norris, 2001:4). Bodies are biomechanically designed for moving around, not for sitting still or standing still for long periods. As Speed notes, ‘muscles, particularly those of the abdomen (the obliques, transversus, and recti) provide dynamic stability and fine control to the spine (Speed, 2001: 1120).’

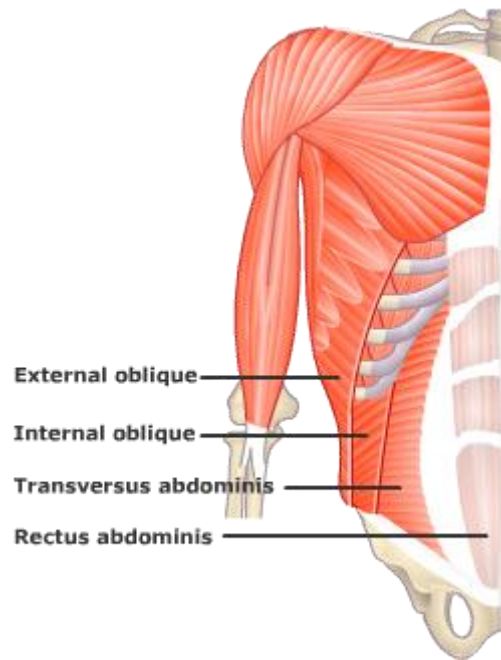


Diagram 2. Abdominal muscles that support and stabilise the back²

So a weakening of these muscles tends to create the conditions for LBP. A lifetime spent using chairs and back supports leads to the erosion of these muscles and ligaments and attempts to remedy this through, for example, sit-ups and other standard exercises, can actually make the situation worse as these exercises do not reach the internal (core) muscles of the pelvis and the torso. The latter can only be exercised through natural activity such as sitting in an autonomous way (Clark, 2002). It is, then, this combination of natural and social mechanisms that tends to generate the wide-spread problem of LBP. The lower part of the back is composed of 5 vertebrae known as L1 –L5 and this part of the back has to bear the entire weight of the upper body and is placed under continual pressure when it is bent, twisted or lifts weights (NHS Direct, 2006). In particular Christopher Norris targets the multifidus muscles

as the key to LBP and core back stability (Norris, 2000: 51). The potential vulnerability of the spine and the social causes I have outlined act to produce the patterns of LBP that shape the lives of many in the world system.

The human spine has evolved to assume an S-shaped posture in order for it to function properly.

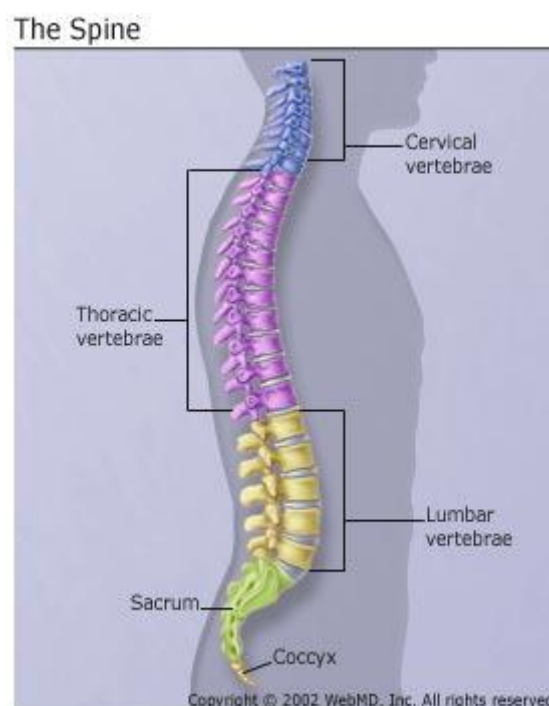


Diagram 3. The S-shaped spine³

Unlike many of his designs Corbusier's reclining chair is an example of furniture that promotes good S-shaped posture:



Diagram 4. Corbusier's recliner⁴

Most furniture does not encourage this and instead encourages us to adopt a C-shaped posture as seen below (Arnold, Gillerman and Zimmerer, 2006).



Diagram 5. C-shaped posture⁵

The consequence of this is that muscles and ligaments around the lower abdomen and back are not used to maintain a proper posture and are increasingly weakened over time.

The root of the problem in universal office furniture design is described by Dainoff as the '90° posture problem'. The widespread introduction of computer technology into the workplace in the 1970s led to an epidemic of health problems, largely caused by the belief that the best posture when sitting at a desk is one where people sit with major joint angles at 90°. Such posture

places undue stress on the back that over time affects both discs and muscles (Dainoff, 1994: 37-38). This is as true of furniture in the home as it is of furniture at work (Norris, 2001: 4). It also means that people sit in a manner that places stress on the seat bones as set out in the diagram below which compares the optimal standing position with the harmful right-angle seating position (Mandal, 1987):

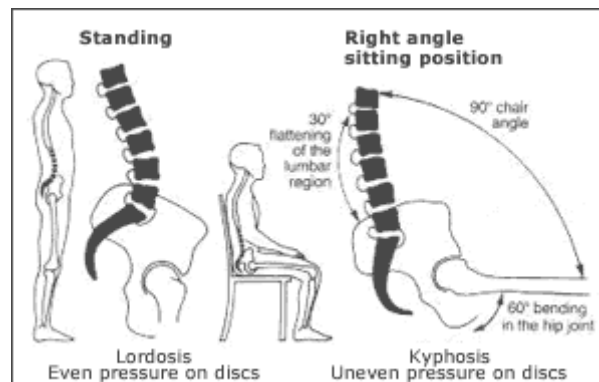


Diagram 7. The impact of sitting at 90° (right-angle) on the seat bones at the base of the spine.⁶

An ideal sitting position can be seen in the development of saddle chairs, a point made by Mandal and others, because of the way in which they support correct posture and encourage the working of the core back muscles. As an interesting historical aside, the saddle has no known designer but was the result of many people amending and altering the design over time.



Diagram 8. Saddle Chairs.⁷

This illustrates precisely the divorce between production and consumption that occurs under capitalism where there is no substantive democratic input into the process. As the production of goods has altered from production for use to production for exchange for profit so there has come about a professionalisation of the design industry. This, in turn, has led to the separation of design from any significant input by users, instead being driven by the demands of clients (manufacturers). There have been recent attempts to bridge this gap in many countries through user-centred design and I will turn to this in the conclusion. As a consequence furniture is produced that proves to be positively harmful for people. Even the rise of (usually very expensive) Ergonomic furniture is not necessarily an improvement over conventional furniture, accepting as it is of the conventional right-angle 90° design.

Given that this is a process that begins from childhood and that embraces all aspects of design it is hardly surprising that by the time people reach adulthood many people suffer LBP's. All aspects of work and leisure are

affected by this design problem from the much loved comfortable settee or armchair, through to the shape of seating in trains, planes and cars.

It should be added that this does not mean that lower back injuries can *only* be caused by this combination of factors. Rather, it alerts us to the way in which the contingent conjunction of specific natural and social causal mechanisms in an open social system can act to generate these injuries with regularity. The importance of this study is that these social causes, unlike the natural vulnerability of the back itself, can be removed. To do so is a matter for social policy.

Those working in these areas who want to challenge the problems generated by bad design have long-recognised that solutions have to be practicable and achievable, moving from the small and local through potentially to the global (Ward, 1996 and 2000). In a capitalist world system this inevitably raises the question of costs and the question of who would be expected to pay for the re-organisation of work-place environments, transport and the home. For example, Jacobs and Golmohammadi carried out a review of the existing literature on the cost of LBP in 2003 and all of the work they studied viewed the concept in monetary terms only rather than quality of life (Jacobs and Golmohammadi, 2003). To illustrate the far-reaching scale of this problem, the most persuasive design response to the problem of LBP is to emphasise that the best furniture for people is that which enables them to maintain an S-shaped posture for their spines. Thus office furniture and the organisation of office space for workers would have to be re-designed to allow people to work in a variety of reclining or horizontal positions, meaning fundamental changes

to how people write, type, read, and organise assembly lines. It would also mean the re-designing of office lay-out as it might entail working much closer to the floor than is currently the practice in offices (Kroemer, 1994: 181). In addition and alternately the re-organisation of offices and the workplace might learn something useful from C19 and early C20 practices (Lueder, 1986: Introduction). In this period offices were often organised in a more active manner with people working at raised and tilted desks and moving around rather than being sat continuously in the fixed sedentary c-shape of modern design (Mandal, 1985: 10). Research in this area suggests that there is no particular advantage to carrying out mental tasks while sat at a desk. They can be performed just as or more successfully whilst standing up. Again, the idea that thinking and sitting are connected is simply a powerful cultural convention but no more than that (Vercruyssen and Simonton, 1994: 119-122).

As will become clear, my argument is that this is ultimately a structural problem, not one caused by malign intent on the part of furniture manufacturers, but instead a problem that has emerged due to the convergence of three major social causes: the cultural significance of the chair and popular taste, the impact of industrialisation and standardisation and the dynamics of capitalist markets.

Take a seat: The symbolic power of the chair

The symbolic importance of the chair has been a recurring theme in European cultures, linked to representations of power, authority and status (Mandal, 1985: 1-8). The origins of the chair are unknown though Japan is the site of the oldest chair on record (Lueder and Noro, 1994: 3). In the pre-modern era

ownership and use of furniture was unusual outside of the realm of social elites. Lueder and Noro note that it took some time for the upper classes to begin to use seats in the West as they were primarily the preserve of royalty and religion. By contrast, in Japan, ordinary citizens did not use seats until the period of the Meiji restoration (1868-1912). The chair itself was normally linked with ceremonial activities related to either religion or politics. For example, the enthronement of monarchs usually culminated with the figure taking their place in an ornate and over-sized chair that symbolised their importance and power. Chairs and benches held a similar symbolic importance for the church with the plain and functional (not to say uncomfortable) pews for the congregation and elaborate seats of stature and grandeur for the religious figures (Sember, 1994: 222). On one level, then, the meaning of the chair for various cultures has been to help characterise social rank, hierarchy and power; the recognition of certain legitimate forms of divine and secular authority. It is the expansion of European power in the C16th and the construction of the modern world system that sees the chair take on the symbolic form of representing an important feature of a civilised, modern life.

With the profound social revolution ushered in by the Enlightenment in Europe in the C18 and the breakdown of traditional forms of authority, furniture and the chair in particular began to assume quite different meanings. This is seen, for example, in the birthplace of capitalism, the UK, where a newly emerging bourgeois class and aspirant working class began to pursue different kinds of lives with different social aspirations. The desire for comfort and luxury took root in all social classes in this period and was seen as

a realistic material goal in a capitalist society where goods were being produced in abundance. The desire for comfort included the desire for furniture in all its forms and was reflected in the spread of ownership of furniture over the course of the C19 in the UK. For the working classes, of course, the aspiration to obtain the material goods needed to live a decent life was to be realised through class struggle and confrontation with both the state and the owners of capital (Thompson, 1991). It was in the early to mid-C19 that the mass production of furniture took off and although there were subsequent reactions against it by romantically inclined designers such as the British 'Arts and Crafts Movement' it was this period that saw the innovation in design that has become standardised today (Lucie-Smith, 1979).

The changing meaning and use of furniture in this period was part of the wider social changes taking place in European society where new political, economic and cultural practices were emerging. It was the desire for social status that saw the construction of new meanings to explain the use and symbolic importance of social goods, including furniture (Weber, 2001). This was intimately bound up with new patterns of family life centred around the household and away from more communal or shared patterns of living. As feminist writers have noted, the family unit that emerges over this period becomes a new site of power as to the meaning and role of gender (Oakley, 1981). The new household unit that emerges becomes centred around new rituals such as the family meal and watching the television, most usually with the father figure at the centre of the seating arrangements. The rise of mass produced furniture was part of this general social re-organisation and the embedding of new cultural practices and tastes shaped by gender and class. To

enjoy these new experiences you had to believe that you were sitting comfortably. To be modern and part of the modern world has long meant acquiring the material goods that symbolise modernity, including and importantly a furnished home. As Elias noted in his work on 'Manners' there is both a sociogenetic and a psychogenetic aspect to the ways in which taste becomes embedded in a population (Elias, 1978, p. XV). It is not the imposition of bad design and bad taste upon docile populations but the ways in which people actively come to desire and identify with the very things that unknowingly cause them harm.

The emergence of leisure as a goal for all social classes takes root in this period too (Koshar, 2002). Working class organisation through trade union action won the right to shorter working days and holiday time. The question then emerged as to what to do with this spare time and with the money that could be set aside for leisure activities? Even here the design of the chair has a profound impact on the shaping of the body. Whether the ambition was to travel in cars, trains or planes, to visit the theatre or the cinema, to attend sporting events, most of them entailed using seating that served to encourage sedentary activity and bad posture. Increasingly over the course of the C20 there is a tendency for leisure to move away from active pursuits towards forms of commodified *and* sedentary practices. This has reached the point where, as I noted earlier, physical activity is in dramatic decline in many parts of the world system. Thus, by the C21 this has become a major structural part of everyday global cultural life for millions of people, from work to leisure people rely upon the very furniture whose design aggravates the spines

potential for instability and injury. In order to examine this in more detail it is necessary to turn to the spread of industrialisation and standardisation.

State Regulation, Industrialisation and Standardisation:

Hallmarks of modernity

The second and related major social cause of LBP has been the movement towards state regulation, industrialisation and the standardisation of production. Industrialisation saw the introduction of new forms of technology into the workplace for the mass production of consumer goods. With this came the gradual erosion of traditional craft and guild practices, including those rooted in the production of furniture (Mandal, 1985: 9-11, Lucie-Smith, 1979, p. 157). In order for the mass production of furniture to create national, regional and ultimately global markets, there was also the need for the standardisation of production practices, guaranteeing that certain forms of design would ultimately become universal. The integration of the modern world system from the C16th onwards brought with it these three processes, all of which facilitated the ascendance of European economic and cultural practices and power.

The impetus for standardisation comes from two main sources historically: the state and business. For the state the regulation of industry was in part a response to pressure from working class organisations that were demanding protection from brutal forms of capitalism. It has also become a state concern regarding the protection of consumers from companies producing dangerous goods and services. So powerful has this trend become that the state has extended its reach over all areas of production at national, regional and global

levels to demand that businesses adhere to minimum standards (Braithwaite and Drahos, 2000). It needs to be stressed that this is a widely uneven process that sees companies able to exploit weak national governments and workforces as a means of avoiding regulation of environmental, health and safety regulations. State regulation and standardisation has generated a paradox for progressive libertarian social forces in that the expansion of the state was a response to the socially destructive nature of capitalism that sought to protect workers and consumers from business, and yet over time it has served to deepen and extend state power over populations.

Interestingly companies have also pushed for the standardisation of production but for quite different reasons. For businesses, standardisation becomes a mechanism for lowering costs as parts become interchangeable and designs become universal. This is a pattern that can be seen in all areas of industry from the early C19 convergence of railway track gauge through to the impact of Microsoft as the standard for computer software. It is equally the case for the design of furniture. The standardisation of furniture design and production has combined with the ambitions of employers to monitor, survey and control their workforces to produce standardised forms of office and factory layout, whether open plan or assembly line (Lueder, 1986: Introduction). There are important variations here but the overall tendency is that the need for social control by employers over workers tends to reproduce poor posture in the workforce through the use of badly designed furniture and sedentary working practices. This is a point emphasised by Festervoll who says of the technology of furniture design that ‘the evolution of technology [in the construction of the office] has been guided by technocratic thinking rather

than attention to our physiological requirements for variation and movement. In addition, the decision-makers who influence this evolution have often not personally experienced the physical problems they engender (Festervoll, 1994: 414).’ Technology and furniture in the office serves more as form of social control and tends to shape the body to fit design standards rather than producing design standards that fit the needs of the body.

A similar pattern occurs in the home but for different reasons. In the home it is a process of self-disciplining as people incorporate standardised furniture into the spaces that they occupy, leading them to shape their bodies to the needs of the furniture rather than furniture being produced to fit the needs of the body, and in particular, the back.

The standardisation of industrial processes is a powerful structural factor shaping the production of furniture whether at work, at home or in transport. This is not simply a national process but one that can be found at the local, national, regional and global level and in all three zones of the world system: the core, the periphery and the semi-periphery. Much ergonomic research has stressed that any solution to the problems generated by standardised poor furniture design has to be varied and shaped according to the needs of the particular worker. By contrast, Mandal notes that the International Standards of School Furniture (ISO), which is spread throughout the industrialised states of the world system promotes design standards that are harmful and ought to be changed (Mandal, 1994,: 277). This is where the problem lies as it is this need for flexibility in design that goes against the financial advantages of standardisation (Dainoff, Balliet and Goernert, 1994: 101-102).

Capitalism and commodification: The profit and pain calculus

The third social cause to be considered is that of capitalism as a system of social organisation and economic production. Although regulation, standardisation and industrialisation are related processes they are not simply reducible to capitalism. Regulation, standardisation and industrialisation can all be features of radically different accounts of the good society. Under capitalism they take on specific forms, in part determined by the type of state they are found in, its place within the capitalist world system and the impact of local culture. The significance of capitalism for this study is that it is a system of production and consumption of goods that shapes the modern world system, bringing with it an attendant set of values and strategic priorities for companies, the most important of which is the need to maximise profit and accumulate capital. The consequence of the latter is that it tends to subordinate other values to an over-riding economic imperative, producing what I have termed the profit and pain calculus.

The production of furniture has become a global market where profit margins are huge (Barnes, 2006). The UK domestic market for school furniture alone is worth £950m (Design Council, 2002). The issue for capitalism is the extent to which it can carry on creating profit while unintentionally producing pain for consumers and workers alike: the profit and pain calculus. This is a structural contradiction in capitalism in that it is not the intended outcome of actually existing capitalist furniture manufacturers to harm their workforce and consumers. But when combined with the social causes I have focused upon it has led to the construction of a system whereby the existing social and

economic pressures make it very difficult for firms to fundamentally re-design furniture even when they know it causes harm. Sweden is the country with perhaps the most sensitive design technology for the production of furniture where there is a strong emphasis on designing to accommodate people's physical and mental needs, but it remains largely an exception (Festervoll, 1994: 416). The power of profit is over-riding as are the orthodox patterns of taste that shape furniture production in consumer societies. A solution to this problem cannot simply be a matter of an individual manufacturer deciding to change their design style. As I noted earlier, work, leisure and transport are deeply embedded structures of relatively inflexible design and practice throughout the world system. No single capitalist firm can fundamentally change these patterns.

The expansion and integration of capitalism as a global system has seen the entrenchment of capitalist values throughout the world system and the displacement or subordination of alternative value systems. As markets have moved from being national to regional and global in their reach so the spread of bad furniture design has become global. This is supported in turn by a pervasive and powerful advertising industry that seeks to construct 'cultures of desires' in particular directions and towards particular goals. As material beings there is nothing 'unnatural' about wanting things. The important point here is that capitalism is about presenting us with structured choices in capitalist markets: people can choose from what is offered to them by corporations but they cannot control those choices in a significant manner (Ewen, 1990 and 1992). Free choices are always within limits and are subjected to the perpetual bombardment of advertising, branding, marketing

and the myriad forms of product placement that are integral to popular culture. Out of this complex combination of social mechanisms emerges a consumer culture that values furniture whose design is harmful to the back. What conclusions can be drawn, then, from the argument presented here?

Conclusions: From good design to good society

The claim of this paper is not that LBP can be eliminated forever. On the contrary, ill health and injury are part of human existence (Speed, 2004: 1119). What I am arguing is that it is potentially possible to remove the existing social causes of the problem. The question remains as to how this is to be done. This is a matter of social policy where responses can be situated towards a more libertarian or authoritarian end of a political spectrum. My view is that libertarian means should be used to achieve this end as they will be more in keeping with a natural desire for free social relations. However, as an abstract principle this does not address the issue of *how* to pursue such ends given that existing social, political and economic institutions in the world system tend to promote authoritarian rather than libertarian practices, values and beliefs. In order to assess strategies it is important to look at existing responses to this problem and I will begin by examining the role that state regulation has played in this.

(a) State Regulation

States throughout the world system have assumed a regulatory power over capital and society for a variety of purposes. Through political pressure working class movements have been able to force states into regulating capital to introduce health and safety legislation to protect workers and consumers

alike. It is these social and public services that libertarians would want to maintain in a good society whilst transforming the ways in which they are organised. There is a positive aspect to the state's power that has led to the recent transformation of seating for schoolchildren in Denmark, Sweden and Germany in order to combat LBP's (Mandal, 1994: Chapter twenty). The introduction of tilting desks and upright seating encourages children to adopt correct posture whilst at school and sees the state acting in a socially responsible manner. This has been brought about through the influential work of the Danish physician Mandal who has designed forward tilting furniture and sloping desks to promote good posture that places the spine in the optimal position for balance, rotation, flexibility and movement (Mandal, 1994: Chapter thirteen). The picture below shows three sitting positions with position C the one designed and tested by Mandal. As can be seen from the images, the person moves from assuming a C-shaped posture to a more flexible and optimal S-shaped.

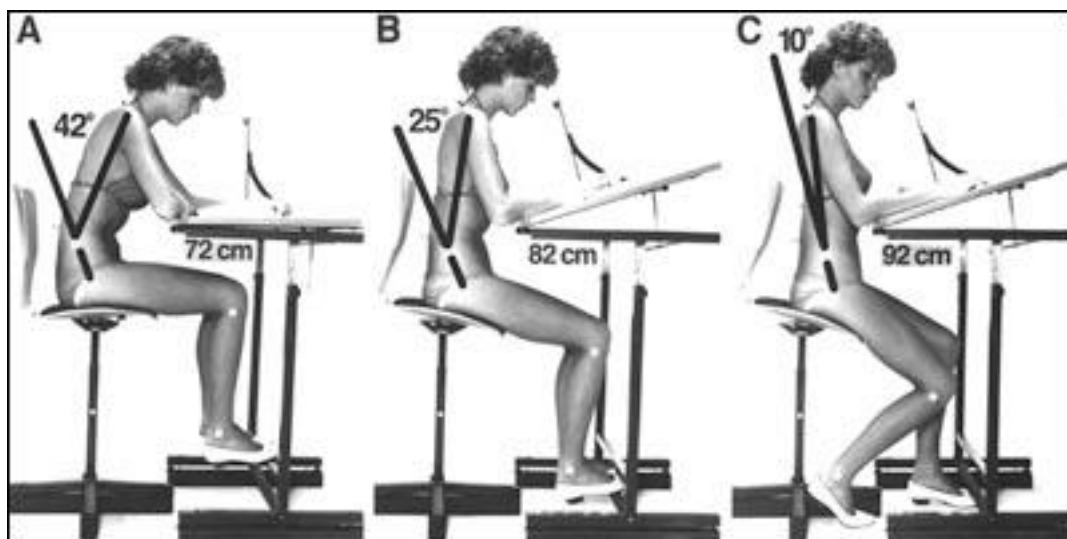


Diagram 9. Conventional office seating and Mandal's forward sloped seating and tilting desk⁸

Mandal's work is important and challenging as it directly confronts the technocratic nature of design in capitalist societies where design and aesthetic are determined by professionals and divorced from the needs of the consumer who is offered a variety of badly designed finished products from which to choose. The main aim of Mandal's work has been to focus upon the seating arrangements for schoolchildren, working on the reasonable premise that if you want to tackle lower back pain it is important to get people into good habits at an early age (Watson et al, 2002). Interestingly Mandal employed the libertarian approach of actually asking children what they thought was a comfortable way to sit and what wasn't. When this information was integrated with his physiological and biomechanical studies of the back it enabled him to develop his forward tilted seating and sloped desks as an appropriate response to the problem. It is quite striking that no one had thought prior to this of actually asking children what made for good seating in schools, illustrating how deeply engrained authoritarian social structures are in a world largely designed by technocratic professionals (Mandal, 1985: 14-20). As Mandal noted, children have to be forced or disciplined into assuming bad posture as they naturally tend towards sitting in positions that are comfortable for the back. This point is confirmed in a report by UK researchers which says that 67% of children rock backwards and forwards on their chairs in order to find the correct balance and posture (Knight and Noyes, 1999: 757). Mandal illustrates this with a picture showing how a child seated at a table in a chair angled at 90° will rock on its chair in order to assume a position that provides

them with appropriate posture, enabling them to avoid bending their backs into the C-shape. In practice, this is the type of thing that will lead to children being reprimanded as they are not 'sitting properly'. The child's natural and unconscious response is one of self-protection against the cultural practice of what is said to constitute good manners (Mandal, 1985: 36-42). It is interesting to see this natural response being pitched against cultural practices that are in fact sites of power struggle, in this case within the family, regarding what are proper seating arrangements. However trivial this might seem, the repercussions of such authoritarian social practices are profound for future health. Social conventions such as the need to sit properly (actually unnaturally) at the table became the norm with the spread of industrial capitalist societies in Europe in the C19 (Elias, 1978):



Diagram 10. A Woman improvises in order to assume a natural seating posture whilst using badly designed furniture⁹

An important response to this problem from libertarians should be to push for greater regulation by all states within the EU to transform furniture for children at schools, whilst at the same time attempting to build a social movement supportive of workplace democracy. One of the attractions of Mandal's work is that it combines scientific rigour with practical, tested solutions that are potentially affordable for all schoolchildren within the EU. The key political economy question is how are such changes to be paid for?

In the UK in 2002, for example, the Department of Education in conjunction with the UK Design Council ran a competition to promote innovation in school furniture with prizes of £2000 for the three successful winners (UK Design Council, 2002). However, the reality remains that the school furniture industry remains dominated by conventional designs based on 90° seating and flat top tables. More recently a number of designers in the core capitalist countries have developed a more libertarian approach to design through what is called 'User-Centred design'. Although small-scale so far it attempts to bridge the producer-user/consumer divide by making users central to the design process for a number of goods, including furniture for offices (Winhall, 2007; Quesenbery, 2004).

However, one example illustrates the limitations of state power to act positively on this issue quite starkly. Shortly after taking office in 2001 President Bush stressed his rhetorical commitment to protecting the health and safety of American workers stating, 'the safety and health of our nation's workforce is a priority for my administration'. He followed this by signing as his first national bill the repeal of workplace safety regulations that required companies to apply ergonomic principles to the workplace, saying, 'there's a change in ergonomic regulations that I believe is positive... Things are getting done' (Allen, 2001).

(b) The Capitalist Market

The capitalist market is an historically specific form of market relationship based on the exchange of commodities for profit (capital) and the private ownership of the means of production. This engenders a specific idea about

the meaning of 'value' that encourages certain forms of behaviour on the part of companies: the pursuit and maximisation of profit before all other values. The same, of course, is not true of individuals who pursue a variety of goals in their lives and adhere to complex value systems whilst coping with the structural problem of existing in a world system shaped by the authoritarian nature of capitalism and state power.

Stephen Pheasant has put together a study showing that a number of firms have responded to the need to transform aspects of the working environment to reduce LBP but also notes that many firms are resistant to this on the grounds that health and safety regulations present an added financial burden to their economic competitiveness (Pheasant, 1996). Major corporations have sought to introduce new designs into the work place as Raymond and Cunliffe report but a number of major problems remain: the continued sedentary existence and fixed position of the body in the workplace; despite some adaptation the persistence in much ergonomic furniture with the 90° right-angle furniture design (Clark, 2002). As a result there is a limit to the impact that these designs have had so far in tackling the social causes of LBP (Raymond and Cunliffe, 1997). More recently the Mayo clinic in Rochester USA has worked with Apple and a community based organisation 'America on the Move' on the design for the classroom of the future, a chair-less school and also for the chair-less office of the future. Again, this is a small-scale prototype but is indicative of a change in consciousness about the problems of conventional furniture and sedentary lifestyles (Mayo Clinic, 2006).

As with the state, libertarians need to consider whether there is space within capitalist markets for alternative designs to help transform work, transport and leisure. Capitalist libertarians would say yes to this and argue that the capitalist market is the best mechanism for promoting libertarian values as it gives us free choices as individuals and encourages design innovation. The weakness in the capitalist libertarian argument is its idealised view of how markets work. Their models are so abstract that they offers no insight into the power relations that shape the social world, whether they be struggles around class, gender, age, ethnicity or sexuality. This is a point that contemporary economic theorists themselves concede in their work, though always emphasising how good their theoretical models look on paper (Blaug, 1984: 262-263; Lawson, 1997). Capitalist markets are not simply about free choices for individuals, they provide structured choices for individuals who have no say over how the economy is to be organised other than this limited interaction as a consumer (Lazonick, 1993). That said, could capitalist markets still provide an alternative design for furniture through its authoritarian structured consumer choices? I think that it potentially could do if there was profit to be made from it. As I have stressed already, the problem for companies is not whether they are aware of the problems caused by bad design. The difficulty is that any individual company runs the risk of losing out by radically changing its furniture designs without a much wider transformation in social taste to support this. Why would an entrepreneur take the risk? If the state is prepared to use public money to subsidise the production of this furniture, most obviously in schools as has happened in parts of the EU already, then it would seem to be the most likely short-term solution. In effect the state will guarantee a market for furniture

manufacturers, a public subsidy for private profit. An encouraging recent development in the UK has been the emergence of the Q-learn intelligent furniture company that is beginning to make inroads into the school furniture market (<http://www.qlearn.co.uk/site/index.php>).

At the upper end of the consumer spectrum some small companies have emerged providing highly expensive new design furniture, mainly aimed at a limited sector of the marketplace. And even where the state has acted to encourage these kinds of changes it has run into fierce opposition from capital. For example, in San Francisco in 1990 the city council passed legislation compelling companies to transform work place environments to make them more attuned to the needs of workers with regard to furniture, posture and so on. Although passed as policy local businesses took the city authorities to court to have the act overturned because of the costs that it would place upon them (Kranz, 2000: 210).

At the edges of social policy and capitalist market relations there have been interesting developments around this issue. Both states and corporations have responded to the problem in limited ways. Neither of them are ultimately libertarian solutions but both of them might be used by libertarians as mechanisms to promote progressive social policy, recognising always the dilemmas over strategy here.

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Endnotes

¹ Image taken from the free picture web site Stock.xchng, <http://www.sxc.hu/photo/338475>. Last viewed 12-3-2007.

² Image taken with permission from <http://www.getbodysmart.com/ap/muscularsystem/abdominalmuscles/menu/menu.html>, last viewed, August 2006.

³ Image taken with permission from http://www.ghi.com/yourhealth/encyclopedia/articles/backpain_basics.html, last viewed August 21st 2006.

⁴ Image taken by the author.

⁵ Image taken by the author.

⁶ Image taken from A. C. Mandal, 'Balanced sitting posture on forward sloping seat', <http://www.acmandal.com/>, last viewed August 21st 2006.

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⁹ Image taken by the author.