Part I — Why?
Electronic Summary

A summary of Part I, entitled 25 Ways Ergonomics Can Save You Money, is available electronically. This enables you to print it and provide it to managers and supervisors as part of your effort to gain commitment and involvement. See the Table of Contents.
Chapter 1
Good Ergonomics is Good Economics

The following story is an excellent illustration of the business value of the workplace ergonomics process. The bottom line is that an employee, after attending a class in ergonomics, came up with an idea that was cost-free, eliminated a painful activity, and yielded 90% reduction in time needed to complete the job.

**Vehicle mechanic**

The company was a distribution operation with a large truck repair facility. Every year, some of the older delivery vans were cleaned up, repaired, and sold. The job involved removing the decals that covered much of the surface of the vans. The procedure — "*The way we've always done it*" — was to take a small razor blade tool and start scraping. Normally it would take a day or two to scrape a whole van. The task was unpopular and was traditionally assigned to the person with the lowest seniority.

*Before — Scraping the decals with a razor tool.*

**Painful shoulder**

One morning, an employee was told to start scraping off the decals from a series of vans. By noon, his shoulder and hand were aching. By quitting time, he had almost completed one van and he was in pain. He looked at the work order and he discovered that he had 19 more vans to clean — he was going to be scraping all month.

Then he remembered our class: "The ergonomics guy said if we had a problem we should tell someone." So he sought out the Safety Committee Chairman, who happened to be the union steward for the facility and someone who I had worked with previously on other issues.

The Safety Committee Chairman, well familiar with the task, said, "Well, the ergonomics guy said that the most important thing to do is *think.*" So the two walked to the scraping area and started brainstorming. After a time, one suggested using the power wash (that they normally used to clean the truck) to soak
the decal and maybe to loosen it. They discovered that the hot water heated up the aluminum skin of the van and made it easier to remove the decals. So they turned up the heat of the water, played it on the van for a few minutes, then were astonished to find that the decals easily peeled off.

The time needed to remove the decals fell from one or two days per van to one or two hours. The solution was free, since the power wash was already on hand.

After — The power wash heats the surface of the van.

The decals peel off.

Thinking is good

In my view, this story represents the ideal of ergonomics success stories: it solved a problem that was hurting people; it resulted in dramatically greater efficiency; the employees themselves came up with the idea; and it was free. All that was needed establishing a workplace process that got people in the habit of challenging "the way we’ve always done it."
Another perspective that can help us think about ergonomics in a way that makes good business sense is to realize that in many ways humans have been using ergonomics for roughly 40,000 years. In the same way that a chemist can view much of the world as chemistry, we can see human advancement as ergonomics. In this sense, ergonomics has existed ever since the first human picked up a stone to use as a tool, capitalizing on a human capability and overcoming a human weakness. Adapting our surroundings to fit us is indeed one of the defining characteristics of our species.

Great Ergonomic Improvements in History

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Closer to our own daily lives, we’ve all had experience with ergonomics, even if we have never used the word. We tend to arrange things to fit our own convenience, at least when we can. We keep things we need within easy reach, we change our posture when we are tired of being in the same position, we shift to avoid glare. We try to modify our surroundings to make things easier for us.

So, in some ways, ergonomics is nothing new. By definition, anything that improves (or has ever improved) the interface between humans and systems is ergonomics. Humans have always tried to find better ways of working, taking advantage of our talents and using tools and machines to overcome our limitations. So, from this perspective, it should not be news that ergonomics can promote progress and productivity. As stated above, as a species, we’ve been doing this for quite some time.

The point is that ergonomics is not necessarily anything esoteric or extravagant. On the contrary, much of our economic and technological development has been “ergonomics.”

What is new, however, is the scientific approach to understanding human anatomy and physiology and then methodically designing for people. What now lies before us is to take this natural tendency and turn it into a conscious approach to management and a systematic process for design.
Design failures

Altho ergonomics is in many ways a human tendency, we don't always do things the right way. A special problem is that many times the designers (and here we include anyone who has set up a task or built a piece of equipment) are not the users, so they may not know the unintended consequences of their plans.

All too often, we plan workplaces based on "efficient movement of product" or "best locations for machines," all without much thought to how people are supposed to fit in. Too often, we devise products based on the cheapest way to manufacture, or perhaps on aesthetics, but without much regard for the end user. We think we are paying attention to the bottom line, but we may be missing important costs, such as injuries, errors, and inefficient motions.

Although designers often think about how to fit the task to the person, clearly at other times they — that is, we — do not. Consequently, a formal ergonomics process is essential for business.

Poor ergonomics can cause discomfort and injury to employees, plus be inefficient.

Hidden costs

Too often we expect people to adapt themselves to fit into whatever arrangement has been devised, believing that it has no associated cost. Unfortunately, the human body cannot adapt to everything. People have differences and they have limitations. If business does not understand the basic requirements of humans — how far we can reach or how we perceive information — then there can be many unnecessary costs and failures.

There can be inefficiencies in production and human error in product use. There can be frustrated employees who quit and customers who switch to a different brand. There can be injuries and workers' compensation costs and product liability suits. There may be countries whose markets are closed to our products simply because we ignore differing statures of people. The price tag for design failures can be staggering.
Perhaps an easy way to understand how something as simple as a good chair can affect productivity is to think of when you have driven a car with the seat adjusted for someone of a radically different height. Almost everyone has done this on occasion and has quickly become pained and fatigued. When you continue in this constrained posture, you ultimately reduce your attention on driving or you need to stop driving and stretch.

We would not think of buying a car without good seats and adjustability, even though few of us drive cars eight or more hours per day. If we went to a show room, we probably wouldn’t consider a car without adjustable seats, even if the price were much less, and especially if the seat had no cushioning.

Similarly, when workplace equipment does not fit, we become pained and fatigued and we lose focus on our work or stop work altogether. It is curious that we do not think of the workplace in the same light as we do cars, even tho we spend more time at work than driving, and despite the fact that for most people working is more important financially than driving.

Ergonomics has broad applications that can be used in every business. The opportunities for improving the interface between humans and systems surround us. Every employer can use ergonomics to improve the fit between the place of work and the people who work there. Every producer of goods and services can use ergonomics to enhance the fit between the product and the customers who use it.

Businesses are all about people — how best to use people to make products and services that best help the customers who use them. At every juncture there are people interacting with tools and systems. And at every point in this web of interactions, we can use ergonomics as guidelines for improvement, benefiting business.

This is true whether the business is a one-person firm working out of a home or a multinational corporation with an international network of plants and sales outlets. It is true for all organizations whether for profit or not; it is true for the public sector as well as private.
The ergonomics edge

Ergonomics can enhance the functioning of any organization and can, in fact, be a formidable tool to gain a competitive advantage.

People as assets — We often hear the slogans: “people are our most important assets,” or “in the end, the only source of competitive advantage is people.” These statements do center on truths and hit the core of the competitive advantage of ergonomics. The field offers an approach to the design of work that is based on people — our differences, our limitations, and our reactions and expectations. It offers a process and a way of thinking about the workplace that can turn these slogans into a concrete system of management.

The user-friendly workplace — User-friendly means that things are easy to understand and apply, that mistakes are reduced, and that the human is treated well in the process. It should be self-evident that anything that makes the workplace more user-friendly is good for the bottom line. You can ask yourself how a workplace that is unfriendly could possibly be more efficient than one that is.

Protecting your human resources — The smaller your organization, the greater risk you have of disruption due to the loss of a key person — even if this loss is just a few days because of back pain. Furthermore, you may not be able to replace that person, even temporarily. Even if a replacement is found, skill levels may not be the same or the learning curve may be extended before a new hire is up to the speed of an experienced employee. The more skilled that person is, the more difficult replacement becomes. The more they know about your operation, the more expensive the loss.

Improved morale — Discomfort, aches, pains, and frustration caused by inadequately designed equipment and workstations can easily affect morale. Often it is the little things that frustrate employees and create dissatisfaction, for example the hard edge on a piece of equipment that the employee continually bumps into and no one will fix. These are the kinds of issues that can emerge with a focus on ergonomics and can often be resolved relatively cheaply.

Estimating costs for poor morale is a notoriously difficult endeavor. However, almost everyone in business recognizes that there can be costs. Productivity, absenteeism, and turnover can all be dramatically affected. Applying good ergonomics shows a concern for employees and their well-being that can produce a payoff in improved morale.

The core of work

Ergonomics addresses the core of work: how we humans interact with the tools and equipment we use and the tasks we perform. Whenever the relationship between a human and task is made more effective, that’s ergonomics, and it’s obviously a benefit to business.
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The Costs of Doing Nothing

Preventing injuries is sufficient justification for taking steps to implement ergonomics improvements. But additionally, there are important financial costs that can be reduced or avoided. These costs are often hidden or difficult to obtain in specific instances when making cost-benefit decisions, yet they are factors. The primary costs of neglecting ergonomics problems are the following:

**High workers’ compensation costs**

The high cost of workers’ compensation insurance has been a primary motivator for employers to initiate programs in ergonomics. The tools and concepts of ergonomics have been particularly effective in reducing the primary sources of the most costly injuries: back problems, wrist disorders, and assorted strains and sprains.

Most employers recognize that workers’ compensation costs are rising. Unfortunately, many managers still either accept these costs as a part of doing business, or assume that the only way to seek relief is through their state legislatures. Employers must learn that they have many options for controlling these costs directly, including preventing workplace injuries from occurring in the first place through good ergonomics programs.

Awareness of these rising costs can be used to good effect when justifying purchase of new equipment or renovations of work areas. Often the addition of these costs into the cost/benefit equation can tip the scales in favor of making the improvements.

While this message is aimed at employers, it is also true that employees and unions need to be concerned. As workers’ comp costs take a larger share of the payroll, it means that less money for wages and benefits is available for employees.

Taking action is easier in self-insured companies, where the link between injuries and out-of-pocket costs is more direct. But even smaller companies can reduce premiums by achieving a better rating than the industry average.

**Cost breakdown**

Analyses of workers’ comp costs that I have conducted in a number of companies (large and small) show the following:

- Musculoskeletal disorders (MSDs) typically account for about one-third of workplace reports of injury. But more importantly, they often account for about 75% of costs.

- The costs of various types of MSDs that require surgery approximate the following:
  - Wrist disorder: $15,000
  - Shoulder injury: $20,000
  - Back injury: $40,000

  Altho these are rough averages, you can use them to help frame cost/benefit decisions in your workplace.
Additional costs

Workers’ comp claims are the direct costs related to the conditions that cause workplace MSDs. But inadequate attention to the human factor in the workplace can lead to a variety of additional costs as well, often referred to as the indirect costs:

**Turnover** — Dissatisfaction caused by fatigue, working in uncomfortable postures, and experiencing symptoms of MSDs may easily lead to increased employee turnover.

**Absenteism** — A common reason why workers are absent is that they are experiencing early stages of an MSD. Work that hurts doesn’t exactly encourage people to come every day.

**Mistakes** — People working in awkward and uncomfortable postures are not in a position to do their jobs right the first time. Mistakes are more common.

**Restricted duty** — Finding alternative work for employees who are on medical restrictions because of MSDs can cause considerable disruption in the workplace. Special treatment for employees on restrictions can cause the resentment of other employees. In some workplaces, it can be difficult and time-consuming to even find work that is suitable.

**Paperwork burden** — The red tape involved in handling MSD cases can also entail significant staff time and costs.

The 4:1 rule

Many companies have found that multiplying their direct workers’ compensation costs by four (4) provides a good estimate of the indirect costs. For example, a $20,000 cost for shoulder surgery multiplied by four yields an estimated total cost of $80,000. You can justify a lot of changes and new equipment for $80,000.

Some companies that have studied their indirect costs in detail have discovered that this ratio is higher. I am familiar with a poultry processing company with high turnover where it was actually 14:1.

On occasion, these estimates start generating such large numbers as to lose credibility. I have found that just doubling the direct workers’ compensation costs often yields estimates that are sufficiently large to justify considerable investment in ergonomics.

The fatigue rule

Each minute of productive time lost because of fatigue and discomfort costs roughly $100 per year (based on approximately $40,000 per year in salary and benefits). If better tools and equipment save just five (5) minutes of human down time from fatigue and discomfort per day, the amount saved is about $500 per year.

Multiply $500 by the number of the employees who are affected by a proposed improvement that reduces fatigue and it can help justify investments. As an example, this approach can be helpful in justifying better office chairs.
The profit margins rule

If a company has 10% margins of profitability, then by definition, it takes $10,000 in sales to generate $1000 in profits. Conversely, if there is a $1000 loss (due to an injury or whatever), it takes $10,000 in sales to make up for that loss.

Consequently, this approach can be helpful in getting the attention of people who you are trying convince. Use your own workers’ compensation losses and profit margin. In essence, you divide your losses by the profit margin to obtain the sales that are necessary to recoup the losses.

Take the broad view

It is usually not possible to justify every single improvement, both because of the intangibles in costing human resources and the difficulty in estimating future losses that might be prevented. For example, it is difficult to prove that buying a specific pallet lift will prevent a specific injury.

It is much easier to justify the investment in better equipment in a setting that has a history of problems and a record of high workers’ comp and other costs. Ironically, justifying expenditures is much more difficult when you are in a facility with a good safety record and trying to continue to be proactive. That contradiction points to the inadequacy of the standard approach to cost justification.

Furthermore, it is virtually impossible to calculate the financial benefit of every little item such as an anti-fatigue mat or a raised platform for a particular employee. For that matter, it can be difficult to cost justify a drinking fountain or paving the parking lot or any of a number of items that we routinely provide.

Often it helps to take a broader view and make judgments based on the sum of the arguments made in this section.

Employers should not assume that high workers’ comp premiums are simply a cost of doing business. You can control your workers’ comp costs with good ergonomics.
Studies

There is a considerable amount of data available today that demonstrates the positive financial results from good ergonomics, much of it accessible on the internet. It is not the intent of this book to provide a review of these data. However, a few other studies have special value and ought to be included:

$30 billion/year potential savings

A major study performed by the Government Accounting Office (GAO) on the experiences of a number of major corporations with comprehensive ergonomics programs. The average decrease in workers' compensation was over 60%.1

Workers' compensation costs to employers nationally total over $50 billion per year. These costs amount to 1.3% of payroll. These numbers have decreased modestly in recent years because of (1) aggressive employer safety and ergonomics programs and (2) administrative changes in state workers' compensation laws and regulations.2

Combining these findings, you can conclude that if all companies set up ergonomics programs as effective as those in the GAO study, it would save U.S. employers a massive $30 billion annually.

$61 billion/year loss from pain

In addition to workers' compensation, lost productive time from common pain conditions among active workers costs an estimated $61.2 billion per year. Most of the lost productive time (76.6%) is explained by reduced performance while at work and not work absence.3

25% higher office productivity

Most productivity studies are in the form of before-and-after comparisons, which are usually sufficient to help management decision-making. However, they are not very rigorous from a scientific view, since there usually is no formal control group.

One of the few studies in a controlled environment was done in an office setting. The study found a roughly 25% increase in output as well as an improvement in subjective feelings of well-being. In this study, temporary employees were hired to do data entry, and were shifted back and forth between regular offices and ergonomically designed offices.4

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Human Resource Trends

Several long-term workforce trends may affect the profitability of many companies. Or to make the point more forcefully, if employers do not take these factors into account, the effects might be costly to the company as time progresses. Ergonomics can help management adapt successfully to meet these changes.

Aging workforce

A larger percent of the working population is older than ever before. This trend is a result of baby boomers moving into our older years, plus better medical care and longer life expectancy. Consequently, a large share of the workforce is experiencing the limitations of advancing age. Good programs in ergonomics are needed to compensate for the increased limitations of aging employees.

Employers who have downsized in recent years have often experienced this effect most severely, since layoffs typically affect younger, low-seniority employees first and only older workers remain. Some companies have accepted that their current workforce is the one which they will have for quite a period of time, growing older as a group each year. These employers, in particular, need to plan for accommodations that allow these employees to perform efficiently and safely.

While there are many advantages to having a highly experienced workforce, the concern here is for reduced physical capabilities. Applying the principles of ergonomics can counteract these limitations. Examples include:

**Poorer eyesight** — Improve lighting and clarity of signs, displays, etc.

**Less agility** — Improve heights and reaches and provide more adjustable equipment.

**Reduced strength** — Reduce force requirements of tasks.

**Increased susceptibility** to some types of MSDs — Reduce the MSD risk factors: awkward postures, force, static load, etc.

Good programs in ergonomics can offset the limitations of aging employees. Older employees have more experience, tend to be more reliable, and are already trained and educated. When ergonomic adaptations are made, older workers can be as productive as younger workers, if not more so.
Women in the workforce

The increase in the percentage of women in the workplace has already made its impact for the most part, but is included here to emphasize the need to modify equipment and tools for women, who are often smaller-statured.

It should always be emphasized that generalizations based on issues such as gender have not proven to be of much value. Capabilities of individuals are what matters. For example, in the case of strength we often think in sweeping (and erroneous) terms of all men being stronger than all women. We tend to forget that many women are clearly stronger than many men. Thus, for individual women, no particular modifications need be made, while accommodations may be required for some men.

Individual differences aside, women do tend to be smaller-statured than men. Ergonomists often hear complaints from women that tools and equipment are too large for them to do their jobs well. Thus ergonomic modifications are needed to enable many women to perform to their full capacity. For example:

- Tool grips should be adjustable or available in several sizes.
- Work benches may need to be adjustable or have standing platforms available.
- Long reaches may need to be reduced.
- Heavy exertion requirements of many tasks may need to be improved.

Again, these changes should not be thought of strictly for women. By making universal design modifications, all human performance becomes more effective and productive.

Rising health care costs

Health care costs in general are continuing to rise and are a factor that has clearly affected corporate profits. Preventive medicine — in this case, ergonomics — can help reduce these costs in two key ways:

- It is not unusual for people not to file workers’ compensation claims for work-related disorders if the employer’s health insurance pays for the treatment. There are several reasons for not filing a claim: the employees may not recognize that their problems are at least in part work-related; they do not wish to be perceived as troublemakers; or they may view the workers’ compensation system as too complicated or time-consuming to be worth the effort. Nonetheless, they incur costs — costs that the employer pays and that can be reduced through good workplace prevention efforts.

- The health care system pays for off-the-job MSDs, which may be even more common and expensive than on-the-job MSDs. By providing training and emphasis on ergonomics at work, employers can lead people to adopt better methods and use better equipment and tools at home, thus reducing costs to the overall system.
Low unemployment

At the time of the second edition of this book, the American economy is recovering from a long downswing of the business cycle and it may seem odd to refer to low unemployment as a problem. However, at the time of the first edition, the economy was soaring and many companies had difficulty in recruiting. Furthermore, even during a national slump, certain regions can prosper, leaving at least some companies with difficulties in attracting people with the types of skills they need. Consequently, it is still important to raise this issue.

When the economy is good, low unemployment may require employers to make changes merely to attract a workforce. When jobs go begging, who wants to work in one that makes you hurt?

The best example of this effect occurred in Scandinavia in the 1970s, when unemployment dropped below 1%. Employers in those countries, especially Sweden, responded by investing heavily in ergonomics to attract and keep a workforce. This modernization enabled many employers there to continue to compete successfully in the world market (and helps explain why the Scandinavian countries lead the world in ergonomics).

In the U.S., there have been times recently when unemployment was so low in certain geographical areas that some companies had to close second shifts — a costly step — because they could not attract enough qualified workers. Once again, this dynamic shows the business value of good ergonomics. Improvements in the workplace may be needed to help attract a quality workforce.

Changing demographics

Closely related to the “problem” of low unemployment is the changing demographics of the workforce. Some employers have in the past relied on a steady stream of young males entering the workforce to do physically demanding jobs. This option may not be available in the future, if it is even now. Creative application of ergonomics can reduce the physical job requirements in a way that keeps efficiency high.

Higher expectations

Today’s workforce arguably has a higher set of expectations about work than previous generations. It is probably fair to say that our grandparents and the generations before them expected work to be somewhat unpleasant and grueling. People today do not appear to accept the prospects of coming home at the end of the day worn out and hurting. The comforts and standards of the home environment have improved in recent decades and one would anticipate that most people would expect a parallel improvement in the work environment.

Again, this is hardly a startling revelation. But highlighting this shift reinforces the value of ergonomics. By applying the principles of ergonomics to all tasks, we can design the workplace to help meet rising expectations for comfort and ease.
There are a number of specific steps you can take to help justify investments in improved equipment, whether purchased or modified in-house:

1. **Know your workers' comp costs.** Incorporate them into capital acquisition requests or work orders to help justify new equipment or modifications. In the past, most cost justifications were based on only a few variables such as reducing labor or improving efficiency. Adding a factor for workers' comp provides more realism to the equation and often makes it possible to justify equipment that may have been on a wish list for some time.

2. **Estimate indirect costs** or calculate them when possible. Once these hidden costs are known, it is often much easier to justify changes. On occasion, the magnitude of these hidden costs can be stunning and improvements that ordinarily would be considered quite expensive are easily justified.

3. **Charge costs back to departments.** Rather than have department management think of workers' comp costs as corporate overhead, these costs should be charged back to the department budgets where the injuries occurred. This practice can provide a truer picture of costs and can markedly change how decision-makers think about prevention.

4. **Remember that qualitative statements are sometimes enough** to obtain support. Most good managers recognize that not all costs can be quantified, especially for safety and human resources. Mere recognition that these costs do occur can be helpful in making changes. Even without being able to obtain hard cost data, reflecting on these issues can often show that ergonomic improvements can save money.

5. **Add the term “safety” to the capital acquisition request.** Many decision makers are reluctant to turn down legitimate requests that involve safety consideration.

A better understanding of the true costs of your current methods can help justify the investments for change.
A People Program

Ergonomics can help both public and private employers in a couple of especially people-oriented ways:

Empowerment and involvement

Ergonomics fits well into current efforts to involve and empower people at work. The process of applying ergonomics in the workplace takes advantage of employee capabilities, ideas and input. Many ergonomics issues can, in fact, only be addressed through the active participation of the employees who do the actual work.

Empowerment means not only allowing people to make decisions, but also providing sufficient training to increase their competency in making those decisions. For example, millions of employees and supervisors are responsible for laying out work areas and establishing work methods, and yet few have been trained in the principles and techniques of doing so correctly. Teaching people about ergonomics can help fill that gap. Moreover, being able to apply concepts of ergonomics is a skill that employees can bring to any task, and thus a valuable asset in our rapidly changing technological environment.

Programs already established in the workplace that involve people can be used as a base for ergonomics. Examples include employee involvement in quality or improvement. Ergonomics can take advantage of these previous efforts and, in turn, contribute back to them.

Conversely, if a company has never established these formal mechanisms to involve employees, focusing on ergonomics issues is a good place to start. The concepts are relatively simple and result in direct benefit to the employees themselves, which both serves as positive reinforcement for contributing ideas and provides a base for expanding to other issues.

Comfort

Sometimes people have gotten the simplistic impression that ergonomics means providing "cushy" jobs or slowing down production. "We pay people to work" goes the saying, "not to take it easy."

Reducing discomfort may sound acceptable, since it connotes removing barriers to human performance. But trying to provide comfort doesn't sound right in the harsh world of business. However, a closer look at the word sheds some interesting light.

The English word comfort is taken from Latin and literally means "to strengthen" ("com" is an intensifying prefix; "fortis" means "strong" or "force"). Other modern words taken from this Latin root include: "fortify," "fortitude," and "fortress."

For whatever reasons, the meaning of comfort changed thru the centuries from meaning "to strengthen" to a softer meaning of "to console" or "to ease." But it is the original sense of this word that captures better what is at stake: "to strengthen the ability of a person to perform a task better."
Ergonomics issues are often good ones for joint problem-solving between management and labor. Redesigning the workplace using the principles of ergonomics is a “win-win” situation for management and labor. From the union’s viewpoint, jobs are improved, injuries are decreased, people are involved and become more satisfied. These are also worthy goals from management’s viewpoint, in addition to reduced costs and increased efficiencies and innovations.

Experience in many industries shows that after starting joint union-management programs on basic issues such as worker safety and workstation design, new relationships were established with positive impact on other areas. Joint programs in ergonomics can thus pave the way to other joint problem-solving efforts.

In my own experience in the auto industry in the 1970s, I witnessed a turnaround in relationships in many locations — from bitter adversarial ones that can only be described as “lose-lose” to relationships that fostered effective joint problem-solving and even mutual respect. The initial effort to improve these relationships was concern for worker health and safety, which began to expand into workplace ergonomics in the early 1980s. Far-sighted leaders in both the UAW and the Big Three had agreed to find ways to change old patterns. Workplace safety was the common ground from which other efforts grew.

This is not to suggest that unions and management always have the same interests; they clearly do not. However, on many issues they do share a common agenda, and working on these issues together can help to develop improved relationships on all issues. Both parties, however, must see their common interests are being served if they hope to improve a working relationship.

Industrial relations consists of a web of interactions that shift and change, sometimes daily. On some issues, interests intertwine, and on other issues or at other times, interests may conflict. Finding these moments when interests are in harmony and having ergonomics tools available to take advantage of the opportunities is a key to success.
Ergonomics in Products and Services

Most of this book is written from the perspective of the workplace. But much applies from your customer’s point of view for the sale of your products and services.

Customer appeal

It should be self-evident that increasing the friendliness of any product or service — improving comfort, reducing exertion requirements, eliminating confusing controls, and so forth — improves the customer appeal. A better design achieved through good ergonomics can provide a tremendous edge over the competition.

There are almost always ergonomics issues involved in the use of products, which when ignored, are sometimes fatal to the product. Note that these concerns do not necessarily involve musculoskeletal injuries, rather center around a broad set of questions that have to do with human-product interface:

1. How is a human involved with this product?
   - Is it easy to use?
   - Is it easy to service and maintain?
   - Is it easy to install?
   - Is it easy to learn how to use?
   - Is the way that people actually use the product the same as you intended?

2. Are there physical issues?
   - Exertion, reaches, contact stress, lack of clearance, etc.?
   - Vibration or noise?

3. Are there cognitive issues?
   - Confusing instructions?
   - Non-intuitive operation of controls?
   - Knobs and dials not standardized?
   - Long learning time?
   - Poor labeling or signage?

Formal review

Every product should undergo some type of review while "wearing your ergonomics glasses." This evaluation can be simple or very complex depending on the needs, but it should be done formally.