How we changed structures and processes

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Over a period of several years, the employees and their superiors — together with their line manager,[1] the author of this article — completely redesigned the labor process at and the structure of the Lemken Company, Rhineland, Germany. Decision making procedures and responsibility were transferred to work groups; middle management was reduced and decentralized; and the hierarchical organization was flattened out substantially. It was possible to create a shopfloor culture of trust based on direct communication between the work groups and the remaining management. Information, including that about the company's financial situation, was made accessible to anyone in the company. Piecework payment was replaced by a fixed hourly wage. Flexitime and a voluntary profit sharing scheme were introduced.

Keywords: workers participation, work redesign, semi-autonomous work groups, flat hierarchy

1. Introduction

At most companies, managers are likely to understand structural optimization and process optimization as something *technical*. Asked how to exploit improvement potential, they will point to the need to invest in computers, machines and complex systems. Of course, they will mention the development potential slumbering in the employees, but many of these managers have never really learnt much about participation or, if they ever did, have forgotten it again. It should, therefore, not come as a surprise that attempts are still being made to plan and control the labor of hundreds if not thousands of workers by reducing the headcount.

Even though the market has changed so rapidly over the last few years, many a manager has not yet reacted to the new constraints. While concepts

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such as deadline adherence, flexibility and customer relations management are doing the corporate rounds, the main focus is, as ever, on directly measurable costs such as unit labor costs. Many companies have taken (or are about to take) the route of relocating to cheaper countries. In fact, there are good reasons to produce abroad. You are, after all, much closer to the new markets. Yet all too often relocation is little less than capitulation to problems nearer home.

On the other hand, with market pressure increasing all the time, no-one can afford to ignore structure and process change. Also, it is now generally accepted that the creation of modern structures usually entails the decentralization of decision making procedures and responsibility. The most difficult hurdle in this respect is the very idea that power and decision making should be shared, an idea which tends to raise the bosses' blood pressure at once. Some of them (I believe most of them) find it very difficult to let any power out of their grasp. Such managers often occupy key positions which gives them a defining influence on any decisions relating to change. Similarly, it is frequently these colleagues who attend the various change management seminars and workshops and/or who act as external consultants to companies. Many a well-intentioned scheme never really gets off the ground.

The particular climate in a company plays an important role, too. As crisis situations are taken on, all the energy that extensive and interdepartmental change to structures and processes requires is often hindered by too much time and effort being spent on coming to terms with the past. For their part, the production workers tend to think in an instinctively rational way and have a good sense of the improvement potential that already exists. More often than not, though, they are demotivated by what they see as wasteful behavior in the management suite. They feel that they are denied respect and acceptance.

Of course nobody likes a crisis. But instead of lamenting that the crisis has occurred we should see it as an opportunity. As a unique opportunity to reorganize our companies, production processes and corporate culture.

Let me use the following case study to narrate the story of changes made at a medium-sized agricultural machinery factory. Changes which it was my privilege (as line manager) to initiate and supervise. Changes to processes and structures which also led to considerable change to corporate culture as a whole.

2. The Company

Based in Alpen / Lower Rhineland for over 155 years, *Firma Lemken* is a sixth-generation family company. It produces agricultural machinery, especially

various kinds of soil cultivators, and has recently become a market leader in ploughs. Market share in Europe is around 40%. A few years ago, Lemken added seed sowers to its range of products, thus meeting a trend towards providing a complete technology chain from soil cultivation to seedbed preparation to seed sowing.

Despite stagnation across the sector over the last ten years or so, Lemken has enjoyed strong growth. Annual turnover rose from DM 75 million in 1992 to DM 150 million in 2000. The total number of employees jumped from approx. 400 in 1992 to 600 in 2000. Particularly striking is the high proportion of skilled workers which is about 75% and still rising. The cause for this rise is basically to be found in the complexity of the varied products on the one hand and in the complexity of the production processes on the other.

Due to that great product variety — which stems from an equally great variety of tractors, different soil types and the produce which the farmers wish to grow — the factory itself has turned into a pure customer-order processor. End products are rarely warehoused. In addition, business is partly (and seriously) affected by seasonal fluctuation. If spring starts four weeks earlier than expected, then the entire production program has to be advanced by four weeks. This means, in turn, that there is no lack of pressure demanding exceptional flexibility.

Over recent years, the role of short leadtimes and deadline adherence has increased drastically. The order books rarely extend beyond four weeks. For the customers of today, leadtime is as important a factor as price — which also applies to the supply of spare parts, which currently makes up 30% of annual turnover.

Lemken's core business is actually the development and refining of special steels to help stave off , for as long as possible, the inevitable attrition to which soil cultivators are subject. The core business, therefore, lies at the beginning of the production process chain. Since no-one likes to relinquish their core business, the company developed a certain intensity of production which had to absorb all the fluctuations of the market at factory level without transferring the risk involved to the suppliers.

3. Pressure to re-organize

Any manufacturer of agricultural machinery is by definition used to dealing with seasonal factors. Unfortunately, the patience of the customers with regard to delivery delays during the season began to wear thin. Our traditional

customers, the farmers, had themselves undergone a professional transformation and the market was becoming more hectic, more nervous, year after year. New makers of agricultural machines — from Eastern Germany — came on the scene, exerting further pressure on prices. Added to which, there were problems emanating from set-aside programs, farming subsidy cuts and (more recently) the BSE crisis. As the battle for a shrinking market raged, the variety of models *increased* since no producer wished to lose a single customer. Thus pressure on our factory grew daily whilst the conventional tools of planning and control were becoming increasingly unhelpful.

Over the decades, the technology in the factory had been regularly modernized: state-of-the-art CNC machines, the latest computer systems, everything right up to date. Nevertheless, the traditionally Taylorist way in which our production was organized had not changed for years. Finally, we simply had to admit that our company was no longer able to meet demand. We were too set in our ways, too slow and too inflexible.

It was difficult for those involved to comprehend that everything that had been right for decades (and had made us market leader) was now suddenly supposed to be all wrong. But at least we were fortunate that we became aware of our circumstances in good time and that our competitors were having even bigger problems. Some of them, even today, still rely on mass production and Taylorism.

4. The state of affairs before change

Despite the great variety, the Lemken products were made strictly according to the catalogue and sold strictly according to the price list. There was no made-to-order production at all. Once a year, on the basis of various market surveys and previous sales statistics, a sales plan for the following year was drawn up and a production plan derived from it. Driven by a production planning and control system, the production plan had in the past been executed on two levels: components and assembly. That at least was the idea. But as the pace in the market accelerated, the precision of the planning began to decrease accordingly so that, with increasing frequency, the wrong parts and the wrong assemblies were being prepared at the wrong time and in the wrong quantities — and confined to warehouse storage.

The consequences were fatal. We were depriving ourselves of our own capacities: human, mechanical and material. Coupled with the difficulty we had

in procuring our specific kind of steel, the situation continued to deteriorate. In-store stocks of spare parts went up to DM 10 million in value on a turnover of only DM 80 million. Not only that: we often found ourselves in the predicament of not being able to produce what was really needed quickly since, as already mentioned, we had used up our planned resources.

With all those involved — especially at peak times — wanting to make the impossible possible, the number of hasty decisions at this time of year proliferated, as did 'top-level' orders. The result: considerably higher production costs, higher turnover and lower profits. This, by the way, is a phenomenon I have observed in many companies where the managers try to achieve sales at whatever cost — even at times of strong growth.

All we were doing in principle was managing deficits. By calling regular scheduling meetings (once a day in the busy season!) we attempted to handle the interface problems between the various departments. Unhappily, however, these meetings tended to end up as rounds of 'passing the buck'. Sometimes it was the sales department's fault for planning poorly; sometimes it was the purchasing department's fault because input materials were not available; sometimes it was the process planning department's fault since the parts required were not in the warehouse because they hadn't been planned for; and, on other occasions, it was the engineering office's fault because important documents were missing or incomplete. So we ran round in circles. One can sense here, perhaps, the sheer waste of capacity, effort and nervous energy which could have been much more constructively spent on creating change.

Needless to say, the production workers noticed this lack of orientation. There was a lot of anxiety, some sloganeering. The works council tried, in this tense atmosphere, to play some kind of intermediary role, but without any great success.

Our production control system — equipped with high-tech planning boards and related computer assistance — turned into a data maintenance department. Non-scheduled orders were continuously added while non-essential items were dropped; the data technology would have crashed otherwise. We were re-acting and not acting. For example, we retained a piecework pay system for far too long. Due to machine and tool downtime, production runs were all too frequently disrupted — in other words, piecework[2] lost all its meaning. It was high time we changed to a time based wage system.

As you read and think about this description of the past and how inefficiently we were all working, you may care to consider that the vast majority of

SMEs still operate like this today. It is my experience that any restructuring is usually technological rather than organizational.

5. The first steps towards change

The catalyst for the first steps towards change was the sharp increase in stocks. For cost reasons, these simply had to be reduced. However, we did not have a concept and we did not receive external advice. Nor did we really have time to work out concepts ourselves.

We therefore attempted to tackle the problem 'hands-on' in that we would inquire about the point of any overstocks (on which dust had already settled) on the spot. In some cases, the original work dockets were still affixed to the assemblies. In other cases, some stock had been produced during Saturday overtime because that is what the PPC system had dictated. We thus came into conversation with the production workers and suddenly found ourselves up to our necks in interconnecting topics such as tooling-up time reduction, batch size determination, tool flexibilization and similar technicalities.

It also became clear that, by sheer coincidence, we had given birth to a very useful *bête noire*, namely, STOCKS. And nobody objected to this. Management, workforce and works council members: none of them wanted stocks. This meant, as a result, that our first modest working party sessions were free of tension and worry on the part of the participants. The production workers were invited to attend (for the first time ever) and eventually the first plans of action materialized with the focus initially on the flexibilization of tools and jigs, shorter tooling-up time and a reduction in batch size. The first workplaces were dedicated to made-to-order production.

For the next two years, our company was to resemble a building site. Small teams redesigned individual workplaces. Later on, entire areas were physically combined to improve the flow of materials. Work teams were put together on both a situative and interdepartmental basis with the workers and members of the works council being consulted. As time passed, the initial reservations between departments, between management and works council and between the hierarchies began to subside, too.

Management, by the way, made funds freely available so that the implementation of many a small but excellent idea would not be slowed down due to formalities. In the first two years, a total of DM 1.5 million was provided for tool flexibilization alone.

An important motor of change here was the joint experience of success as the stocks did indeed begin to dwindle. Of the previous stocks worth DM 10 million on a turnover of approx. DM 80 million, we ended up with stocks worth DM 6 million on a turnover of approx. DM 150 million. Further effects such as quality improvement with just-in-time deployment, cost savings on transport and space utilization and reduction of tool-up unit costs proceeded almost automatically. As flexibility and response time to changed plans improved, so did parameters that were more difficult to measure since we now hardly used our resources in a plan oriented way.

By partly doing away with the demarcated workshops, the shopfloor was segmented in terms of final product. Five production islands came into being, each of which contained assembly, preassembly, welding and cutting operations brought together in one place. What also developed in the course of this process — completely unexpectedly — was a new culture of trust between workers and superiors and between works council and management. With the climate so changed, it was possible to experiment in the field of working hours and wages. The workers were so committed to this restructuring that the management board, now trusting the employees' willingness to perform, decided to abolish the piecework pay system and introduce a time based system. Worker performance did not deteriorate as a result. On the contrary, a kind of group feeling came about because the workers no longer had to adhere to piecework-type conventions in order to achieve a gross wage. Wanting to help colleagues was no longer seen as time-and-motion interference but positively encouraged as a new working culture.

Meanwhile, the production flow had been optimally redesigned. Batch Size 1 became the norm for everyone concerned. Groups equipped with all the necessary technology worked on 'their' product. They built up a relationship with their product and thus with the final customer since we were now delivering complete products rather than components. The sickness rate fell continually to its current level of 3%, mostly because the members of a given team did not like to let their group down if they could avoid it.

Since the various groups have different peak seasons, we introduced a group-specific work calendar. These were changed frequently, with the result that a flexitime model (without core time) emerged for the entire workforce. The way was free for the groups to decide on their holiday plans autonomously.

6. New management

In the meantime, a conflict was coming to a head between the newly created groups and the process planning and purchasing departments. The groups put enormous energy into keeping their agreements with the sales department, whether the objects of agreement had been planned or not. The customer's wish was the highest goal. However, the company management was still trying to implement plans. We had omitted to balance the two aspects up. And so we immediately devised a new decentralized product-related management concept. With all those concerned participating — overruling the resistance of some heads of department — we created small decentral teams and built five offices in the five production areas, one per group. Only three months later the once centrally organized staff from purchasing, process planning, production control and product foremen moved into a common room equipped with all the necessary aids — PC, printer, photocopier, fax machine, consultation corner etc. — and began to collaborate in a way that almost defies description.

Despite the lack of planned or on-the-spot meetings, all the people involved were kept fully informed. We soon noticed that the spatial proximity of those participating in one group, be they clerical staff or production workers, represented one of the most significant changes. Customer orders or machine design was amended in no time at all, in minutes even. In the old days, merely changing the diameter of a borehole could take days if not weeks.

We had, incidentally, abolished the head of department level (i.e. not replaced it) so we had to find a solution for the future of these managers. Some left the firm. Some found new responsibilities within the firm. But let me say this quite clearly: We never set out to make any employee redundant. Those whom we did let go were those who had worked against the new developments, either overtly or covertly. We would have been happy to keep them on, especially on account of their wealth of experience. On the other hand, there is a great shortage of good managers in German companies and I feel that fear of unemployment need not worry managers caught up in the process of change.

Be that as it may, we found that enormous potential was released in the former subordinates. Success was an experience now shared by everyone; it was not appropriated by the boss.

To ensure that decentral management really can function and does not become a paper tiger, we decided to set down in writing what the new responsibilities were — along with a few common rules:

- The office workers have no internal boss.
- The production workers have no boss.
- The management team does not run the production team i.e. a group welder's superior is the direct line manager.
- Thanks to task redistribution, it is easier for workers to cover for one another.
- The groups work with the sales department on a production plan which is now an aid to navigation, not an instrument of control.
- Any personnel requirements plan is drawn up on the basis of agreed productivity rises.
- Using that personnel plan, the group schedules its own holidays, a general shift plan and a weekly hours plan. Flexitime is the norm.
- The groups manage their own investment budget and make their own decisions as to allocating work at times of personnel and capacity bottlenecks (in other groups).
- The same applies within a limited budget to hiring temporary workers from the district.
- The groups track the time they actually work on the production of a particular machine and compare these data on an ongoing basis with the PPC system.[3]
- Furthermore, they are responsible for product quality, workplace design and production process.
- They are in charge of purchasing input parts, materials and services.
- Finally, the groups have a say in whom is appointed and/or dismissed.

Five years since the system was launched, covering for one another within the groups has become normal. As time goes by, the whole notion of allocating specific tasks to certain workers is vanishing. Indeed, individual colleagues — production and office — have gained several skills. This makes them more expensive but also more flexible. Besides, every company must decide for itself how highly skilled it wants its personnel to be. At Lemken we want flexible (if dearer) staff who are prepared to think for themselves and share the decisions.

Not that the process of change progressed as smoothly as a retrospective account, somewhat time-delayed, might seem to idealize. On the contrary, developments were held up, again and again, by misunderstandings, mistakes and in-fighting. A whole raft of minor conflicts had to be dealt with.

The workers will never handle it, said the middle managers.
Middle management won't let us, said the workers.
Nothing ever changes at this place, said the know-alls.
The workers are only out for themselves, said the directors.
They only want to squeeze us, said the workers.
These things come and go, said the long-serving heads of department.

We're losing our power, said the works council.
Why do we need a works council? some workers asked.
What are they up to? the union reps asked.

Stocks offer security, many a scheduler thought.
We simply can't afford stocks, said the accountants.
Cut tooling-up time, the work groups demanded.
Increase batch size, is many a foreman's call.
Increase machine time, the accountants demanded.
But not spare part production, the work groups objected.

Groupwork messes up the wage structure, said the personnel department.
But we need the flexibility, the line manager points out.

Gatherings at the coffee machines are unproductive.
Gatherings at the coffee machines are group meetings on the cheap.
Scrap piecework and efficiency will fall.
Scrap piecework and liberate all that group-dynamic potential.

Making figures public will lead to rumors outside the firm, the directors claimed.

And so on and so forth.

In the end, all these doubts, objections and questions were dealt with, more or less, and eventually we had reorganized about 50% of the workforce by setting up autonomous groups. There now followed a couple of years learning the new approach. Flexibility increased all the time. Agreements with customers and between groups were kept. The groups decided on their own streamlining potential. Turnover rose, as did profits. Stocks were reduced as much as was viable. The PPC system was replaced and, from then on, it was only used as an aid and not as a commander.

7. Recognizing the works council

It was our great fortune to have a works council that, partly influenced by a generation change, was able to think and act most constructively. Its members were and are open to new ideas. Since we involved them in the changes from the very start, there were hardly any disputes. Added to which, the production workers — prompted by the change management — modified their voting behavior in that they no longer elected the 'big mouths' but the more contemporary, more constructive works council members.

Equally important here was the fact that the line manager and a few other protagonists happened to get on with the chairman of the works council and his colleagues on a personal level. In this author's opinion, management should always endeavor to be open, polite and honest with the works council and trade union representatives, even if the topic on the agenda is an unpleasant one. The vast majority of disharmonious relations and dug-in positions are usually homemade — with the management side having to bear much of the blame. I also think that management should take the first steps in terms of getting together for talks.

That our works council was prepared to take an active role was another lucky circumstance for us. Many works councils prefer to be served ready-made concepts: they are so much easier to criticize if one was not involved in framing them.

8. Information policy

To motivate personnel, and keep them motivated, it is essential that information be brought out in the open. Our workers are constantly updated as follows:

Order book entries, turnover every day
Account balance, stocks every week
Number of items: target / actual figures ditto
Productivity analysis: target / actual hours monthly
General cost analysis every so often
Profit and lost balance sheet every quarter-year
(slideshows presented by the line manager to the groups).
Annual Report once a year.

In addition, management is permanently in contact with the groups on a day-to-day basis.

Having taken the time and trouble to explain the intricacies of a profit-and-loss account to the group meetings, we noted that the workers were quite capable of handling such information professionally. Good profits, for example, did not excite exaggerated claims. After all, the workers, involved in the investment planning process anyway, knew exactly for what the money was urgently needed.

9. Skills upgrading schemes

I have already mentioned that we at Lemken are reliant on a highly skilled team of specialist workers. Well, it was another stroke of luck for us that, in embarking on reorganization measures, we came upon grant-aid programs which would help us finance the extensive skills upgrading schemes we had in mind. Thus it was that nearly all the workforce (over 500) attended negotiation and communication courses which — with a total of 60 moderators having received special training — also made our group meetings considerably more effective. The chairman of our works council went on a process supervision course. Such projects are, unfortunately, very expensive. But they play an indispensable part for most workers at the beginning of any change process which can then proceed somewhat faster.

10. The Lemken profit sharing scheme

Employee profit sharing schemes are no longer controversial. However, it is not just a question of paying out the dividends. Just as everyday corporate reality consists of ups and downs, the employees who receive a profit share during the good times should equally be prepared to make a contribution during the bad times. That is the spirit of enterprise.

Well-informed participation-minded employees will grasp this simple secret quite easily. Factory owners who only talk to the workforce when times are bad — and otherwise prefer to go their own way — should not be surprised if they come up against a wall of scepticism if they happen to be on the look-out for a couple of victims in the workforce.

The following rules apply for the profit sharing scheme at Lemken:

- At the end of the year, the management draws up a profit plan for the following year and this is explained to the workforce. The planned profit becomes the yardstick by which profit or loss is subsequently measured. To join the scheme, you first have to pay an 'admission price' which is deducted from your wages. The price of such a stake can vary between DM 250.00 and DM 2,800.00.
- At the end of the year in question, the actual profit is compared to the target profit and a quotient is calculated to apply to your stake and work out what dividend you will receive. The quotient so calculated is the same for all participants in the scheme. Profits are not ascertained on a work group basis since this might hinder intergroup assistance on the shopfloor. Participation in the profit sharing scheme is voluntary. About 70% of the workforce take part every year. Target profit thresholds, by the way, are always calculated to ensure that a profit on the stake is probable. We want to have a motivating effect on the employees and promote a sense of responsibility in them.

Over the previous years, the following quotients have been paid on the stake:

2000 = 2.5 × stake
1999 = 0.8 × stake
1998 = 1.5 × stake
1997 = 2.0 × stake

In other words, the dividend in 1997 amounted to twice the stake paid in whereas in 1999 only 0.8 of the stake was paid back, meaning that the employees in this case were set back by 20% of the original stake. However, not all was lost. If the employee agrees, half of the 20% is carried over to the following year as a new stake.

The average stake in these four years was approximately DM 1,500.00 with between 60 and 70% of the workforce taking part.

11. A few final thoughts

At the beginning, we did not have a single concept. Instead, we took the long and winding road of many small steps forward, steps which in themselves were shaped by any number of small changes in direction. I would like to call the process we went through an 'open search process'. I believe that one of the most

important innovations at the Lemken Company has been the realization that — after years of technological development in the factory — a new era has started which puts the workers back at the center of things. And genuinely at the center, with everybody taking part in the process of change, not only on paper. We have created a completely new culture — a culture, however, that used to be relatively normal in small-to-medium-sized enterprises. That was when there were no computerized systems, when people had to work closely together. The managers knew the workers by name, had some idea about the family situation. It's something we had lost sight of. We wanted to be like the big guys. With fabulous machines and computers. But we forgot who we were ourselves and what our customers really expected of us. To that extent, it was time to find our way back to our roots.

(*Translated by P.F. Wood M.A.*)

Notes

1. Editor's note: A film about the Lemken participation process has been made and is available from the Friedrich-Ebert-Stiftung. It shows the workers' pride in the results of their conscious involvement in the changes made. "Everything you see here is what we did", says one worker at the beginning of the film. Or as one viewer put it: "the film speaks for the need to expand the prevailing concept of labor for to include a communicative and intersubjective dimension".

2. Piecework wages were calculated on the basis of a comparison between time set and time performed on the production of a predefined quantity. As a system, it only works if minimal downtime is 'logged'.

3. The products themselves are priced by the sales department using shopfloor data as to total work hours for the production of a given machine. However, if the variety of different products increases, such work times can only be calculated on the shopfloor due to the fact that the rigid targets laid down by the PPC system are not suitable for calculating product price.

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