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Putting It All Together

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The rapid changes in politics, in economics, in society itself, are inevitably reflected in the business world. This means that old methods that once worked there are no longer necessarily valid. Perhaps it's time we all restructured our thinking—

PUTTING IT ALL TOGETHER

by Carl H. Poedtke, Jr.
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EACH MORNING'S headlines, each evening's news broadcasts, remind us once again that we live in a world of accelerating change. Things that have been taken for granted for years are not necessarily true any longer. To quote the ruler of Siam in "The King and I": "When I was a boy, world was better spot. What was so was so, and what was not was not."* The King's plaintive lament could very well be the most enduring truth of our time.

That truth has meaning to each of us in the business community, aside from our concern as citizens. Each of us who has spent a significant portion of his career dealing with the development, implementation, and operation of logistics systems should be thinking, as seriously and thoroughly as one can, of the implications of that "enduring truth" today.

Things have changed so rapidly —particularly over the last few months (and they show every sign of continuing to change)—that it seems to me we're all obliged to reassess not only our mode of operations, but also the logistics systems we should use to support these operations in the future.

When using the term "logistics systems," I have in mind the chain of systems, both mechanized and manual, formed by sales forecasting, inventory planning and control, production planning and control, and distribution. I have concluded—slowly and somewhat reluctantly—that, while the classical systems with which we've been familiar for years and the more advanced concepts that have come into use recently are useful, valid, even necessary—in today's environment they are not enough.

In the remainder of this article, I hope to trace the background and observations that have led me to this conclusion. I hope, as well, to offer several suggestions as to what changes might be made—and I believe must be made—to bring those logistics systems concepts and operating practices up-to-date. I believe I can demonstrate that the future holds not only the challenges with which we have been familiar so long, but a whole new group of very real obstacles to our being able to "put it all together."

International business expansion

During the last decade it has become painfully evident to each of us in the daily carrying out of our duties that we are a part of a

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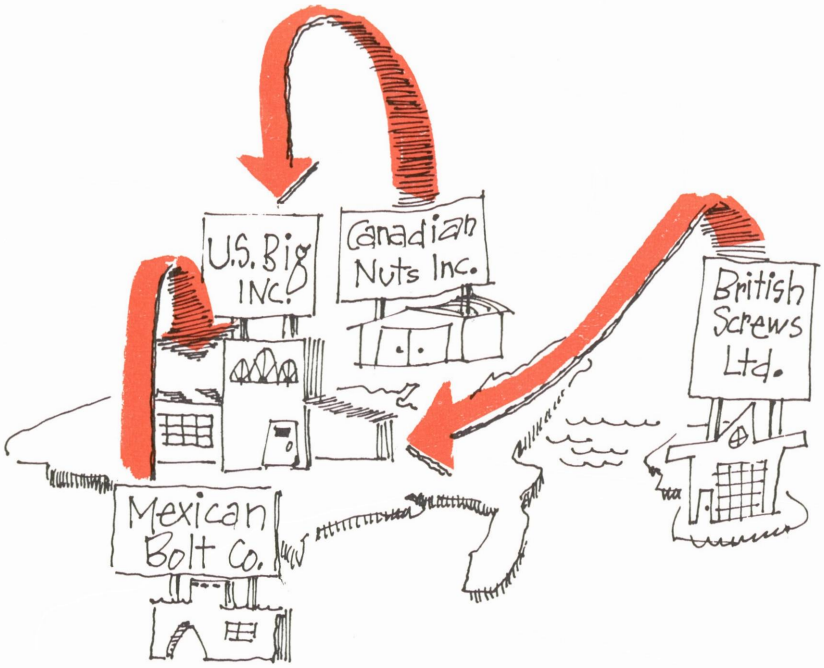

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worldwide business community. This global statement is easily translated into some hard day-to-day facts.

Procurement is no longer principally national in scope. It is international, as are the new generation of problems and challenges associated with it. Components for a product to be assembled in Chicago may flow from foreign countries almost as readily as from Milwaukee. Fabrication and assembly are scheduled and coordinated across the border buffer zone of the Republic of Mexico and the United States. Related logistics systems must be able to cope with the uncertainties that this adds to our operations.

Monetary exchange rates, once the province of Wall Street (something most of us encountered only on vacation) have come to mean more and more to each of us both on and off the job. For example, make-or-buy decisions among foreign and domestic sources can be severely impacted by a swing in exchange rates. As a result, the cost analyst must not only develop an accurate and objective comparison of the alternatives presented; someone also must assess the future probability of material changes in monetary exchange relationships.

In short, this "internationalism" has made economic advantages even more transitory than they have been in the past; it has now put bidding for raw materials and resources on the broadest scale possible. It is also pertinent to observe that this bidding is by no means in the classical "free market."

Uncertainty of business climate

A superb contemporary description of the present climate was expressed by a businessman on my commuter train who said that he could not survive the trauma of the daily news reports: enough is enough!

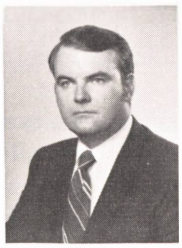
Realistically, of course, we must, as quickly as possible, face up to those developments which will impact our business activities no matter how disagreeable they may be. This may be reminiscent of "cowards die a thousand deaths, brave men die but once," but there appear to be at least four factors which certainly will not disappear even if we were to pretend they weren't there.

Energy Shortages—Even after we pass the current "crisis," experts believe that shortages will continue. We, therefore, need to provide means to cope with this problem not just in the present "for-the-duration" fashion, but as a continuing fact of life. The sooner this is recognized, the sooner business problems can be cast in a more rational and durable framework for analysis and consideration by management.

Inflation—I see nothing to make me believe that this has not become a way of life here in the United States. In fact, it has been a worldwide way of life for some time. This should force us to rethink our classical approach to investment analysis, as in the case of inventories. It also forces us to think of what were normal procurement decisions in the past as almost speculating in commodity futures in today's world.

Government Regulation — Even now that wage and price controls have been lifted, their effects are still with us. Economic dislocations will continue to cultivate shortages at all levels of consumption. Businessmen will be wary of renewed controls. I am afraid I see great temptation in various areas to continue to "tinker" with our economy.

Labor Attitudes—With less romanticism but with considerably more effectiveness, labor will continue to be strong and, in some areas, intransigent. Recent events in the United Kingdom convey this more clearly than anything further I might write.



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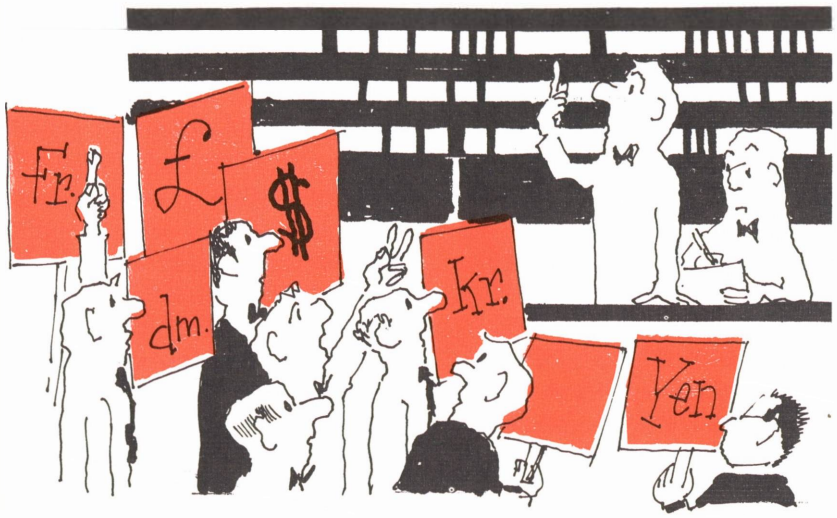

Monetary exchange rates must now play a significant role in our choice between domestic and foreign supply sources, putting bidding between alternative sources on the broadest possible scale.

The last 20 years or so have seen logistics systems evolve at an almost revolutionary speed. Remember, when I discuss logistics in systems I am speaking broadly of the interrelated systems including sales/demand forecasting, inventory planning and control, production planning and control, procurement and purchasing, and warehousing and distribution.

The first phase of this evolution might be called the establishment of reliable static systems. Static systems are those basic planning and control systems using quantitative techniques such as inventory control by means of reorder factors or capacity planning by time periods. The importance of this phase was that it introduced quantitative techniques on a broad basis and began basic improvements in data discipline.

The second phase of this evolution began with availability of the modern computer for business use. Following the mechanization of accounting applications, inventory control generally appeared attractive. Production control applications logically followed. This phase was characterized by mechanization of the basic static systems and by intensive work on improving data integrity.

We are now at the close of what I call the third evolutionary phase. This phase has been characterized by the mechanization of dynamic systems which provided for such advancements as frequently revised sales forecasts using statistical techniques and time series production planning capable of frequent and rapid revision. I regard the systems discussed here as part of this third evolutionary phase.

Not a time for classical approach

The picture of the world which I have painted indicates in the strongest terms that this is not the time for classical approaches and that even the foremost advances of the third evolutionary phase will not completely meet the challenge with which we are confronted. Success in the future, in fact, may be gained most readily by those who can easily disregard past practices and display maximum flexibility. As I see it, *we require a fourth evolutionary phase now!*

Some personal experiences

Most production and inventory control systems designed and implemented in the United States have been broadly based on economic optimization of resources, with a virtually implicit assumption that

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raw materials and energy were infinitely available. This was certainly true of both my academic training and my early business experience.

The first time in my career that I was confronted with a practical situation which called for a truly radically different treatment occurred in Mexico in 1966. In examining the production and inventory control systems of a producer of synthetic fibers, I noted what appeared to be an extremely high level of raw materials. In questioning the president of the company, he quickly and tersely explained that it was possible at any time for the government to close the border to certain materials based upon changes in economic policy. He had to be prepared to keep his plant in operation as long as possible under such circumstances or face severe shut-down and start-up costs as well as other problems. A somewhat high investment in raw materials was insignificant in comparison to the consequences of a shutdown.

During the past year and a half, I have been directing the design and implementation of an improved logistics system for the European manufacturing branch of a large U.S. company. This operation has traditionally had widely scattered sources of supply. Located in Scandinavia, it has procured materials such as electronic components from the United Kingdom, plastics from West Germany, mirrors from Japan, and a large number of items from the United States. Frankly, events of the last six to eight months have necessitated incorporating a number of new features into the system. What was once a fairly straightforward system has now been forced to incorporate a formal hedging strategy.

The following vignette is an example of what I've heard a number of times in the last few months. Recently, I was in the office of an executive of a company engaged in manufacturing paper and plastic products. About a year ago he and I had discussed some severe problems of the company's archaic and inflexible logistics systems. To my knowledge the system had not been changed and I was curious as to how it was functioning under present conditions.

"We no longer have problems with the system because we don't use it," the executive told me. "You see," he went on, "we order all the supplies we can get, manufacture 'flat-out,' and our customers buy everything we make. We are able to pass on our increased costs. Systems are not for times like these. Let's talk about an improved system when things are *normal.*"

After further, more rational, and more purposeful discussion, the executive and I reached some interesting conclusions:

—"Normal" is relative and what will be normal in the future may be radically different from normal in the past.
—The company's system was aborted not because "systems are not for times like these" but rather because the company's system could not be responsive to existing needs.
—The company's enviable position could be quite short lived.

Some factors pointing to this are:

- Finished goods inventories were growing and turnover declining so customers weren't quite buying everything that was made.
- There were indications of customer stockpiling which means that "soon the merry-go-round must stop."

Quite obviously, to avert acute discomfort or perhaps disaster, this company requires a strategy as to what to do when demand slackens and, just as important, systems to support and implement that strategy. Equally as clear was the fact that management was convinced, and I believe rightly so, that any new approach would have to be

There appear to be four factors that simply will not disappear no matter what we may wish: Inflation, Government Regulations . . .

capable of dealing effectively with "times like these."

From my perspective, the most important aspect of changing conditions is how management is reacting to them and how this will influence its future behavior and thereby help mold future systems requirements. I, therefore, attempt to keep apprised of such developments. I have made a special effort to "test the water" recently. During the past weeks I have had a number of informal conversations with some executives of both large and small companies representing such diverse industries as chemicals, electro-mechanical equipment, textiles, home appliances, and paper products. There is a certain unity of viewpoint to be distilled from their comments and I would like to summarize them.

If this informal survey were to be given a title it probably should be, "Things Will Never Be the Same!" An obvious subtitle would be, "Now We Know Who Our Friends Are!" More specifically:

- Logistics systems have suffered a general loss of credibility: they did not meet the challenge!
- Supplier reliability – broadly defined—will be regarded by management as more important than ever before. As one operations vice-president put it, "We will be less likely to be seduced for ½¢ per thousand."
- There will be more demands upon purchasing for flexibility and development of reliable sources. In fact, people are "roaming the world" for supplies. A paper products manufacturer recently sent a purchasing agent to West Germany on short notice because he "heard" there was glue available there. When that turned out to be a wild goose chase, the purchasing agent was directed to head for Norway and size up the paper situation.
- Substitution will be accepted as "normal." Value analysis techniques will be dusted off to push this. Liaison with design and engineering will be closer than ever before.
- Flexibility of production operations will be more closely examined. For example, a chemical processor now mixes two components he previously purchased ready-mixed because they were more readily available in that form. A textile manufacturer with a high degree of vertical integration is prepared to introduce "raw materials" into its process at a number of levels depending upon current availabilities.

It also became apparent that thinking regarding systems has been undergoing a metamorphosis:

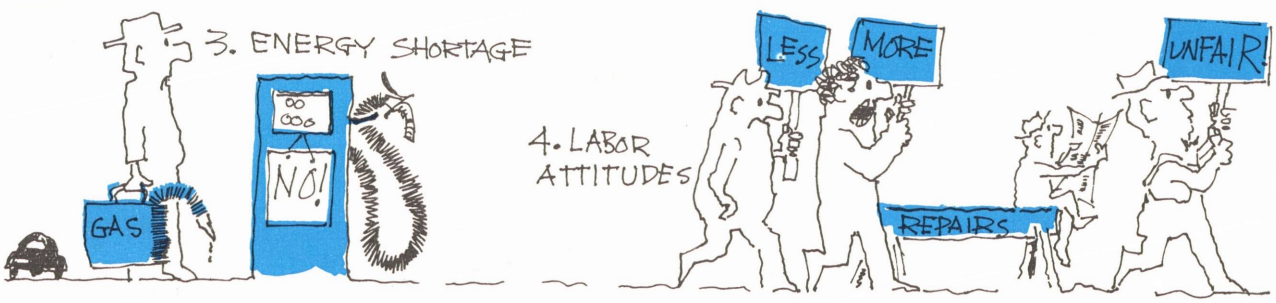
- Non-economic factors, sometimes expressed as utility functions, would appear more frequently in analyses.
- Systems would tend to be less finely tuned, meaning that buffers would appear to provide flexibility.
- More than ever, management wants to feel and be in complete control of its logistics system.

The fourth evolutionary phase

The future needs of management and its attitudes have brought us to what I have called the fourth evolutionary phase of logistics system development. I visualize building upon the sound planning and control concepts which exist, but with some important differences.

The key to progress and to meeting the needs discussed lies in the concept of being *interactive*. Feedback theory introduced us to this notion and in third phase systems this has been characterized by being able to update based upon newly reported information. The fourth phase demands are significantly more advanced. I believe that I can best describe my view of this by briefly discussing a few of the changes required in each logistics system component.

- *Sales/Demand Forecasting* — Current widely applied statistical forecasting techniques, which are



. . . the Energy Shortage, which still continues even if in slightly less critical form, and Labor Attitudes, which may become intransigent.

primarily time series based, need to be tempered by approaches giving greater weight to external factors. At the same time, appropriate means must be developed to provide more rational means of integrating *judgment*—executive, expert, or otherwise—into this process.

- *Inventory Planning and Control*—Present optimization techniques must be tempered by the use of techniques employing utility functions to account for shortages, inflation, and risk factors not readily definable in discrete economic terms. Reliable substitution subsystems are vital to operation in an interactive mode.
- *Procurement*—Purchasing agents need to know not only more about their suppliers but more about their suppliers' suppliers! Materials shortages may make it often necessary to help vendors in obtaining supplies.
- *Production Planning and Control*—Production planning and control must be highly interactive with other systems and with people. Shortages and uncertainties demand systems capable of functioning with frequent intervention. In this area particularly, this means a high degree of coordination between manual and mechanized procedures. There also will be a need to examine capacities in terms other than machines, perhaps in the broader terms of resource availability.

It should be noted that efforts to improve both the quality and timeliness of information are vital. Sound information will be needed now more than ever.

This, then, is what I see as the general shape of future logistics systems:

- Interactive
- Flexible
- Responsive to people and to judgment
- Optimizing in non-economic as well as economic terms
- Not tied to traditional capacities
- More responsive as a total mechanical/manual unit.

In many ways, these are all of the nice things we've talked about in the past but which could not be justified economically or otherwise or which did not seem as important then as what we were working on at the moment.

Conclusion

Uncomfortable or not, this realistically is where we stand at this moment. International business expansion has provided us with new markets and opportunities but it's also provided us with attendant problems. Our business climate is saturated with uncertainty. Problems of considerable magnitude are almost certain to persist.

Each and every one of us will be affected by this. Conversely and fortunately, each of us can affect what will happen. We each need to look at what we are doing and how we can move into the fourth evolutionary phase. By being creative, flexible, and innovative we can be better prepared to combat the problems I have described.

This, then, is the challenge to each of us: to meet reality head on in the job we do; to profit by our past experience; to be better prepared for the future. Then each of us can play a more significant part in "putting it all together."

Purchasing agents must know not only more about their suppliers but also about their suppliers' suppliers. Materials shortages make it necessary to help vendors in obtaining supplies.