Practical Mechanisms for Achieving High Performance

by Dr. Charles E. Berezin

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Organizations can achieve much hgher performance by gearing their internal structures to control variances using principles of sociotechnical systems – a proven mechanism for integrating the human and technical elements of a business process.

These techniques are long established in manufacturing, and hold great promise in the realm of knowledge-based industries such as financial services and healthcare.

Dr. Berezin shares his insights on how to accomplish the performance improvements many organizations seek.

Practical Mechanisms for Achieving High Performance

in knowledge-based industries

Charles E. Berezin, Ph.D.

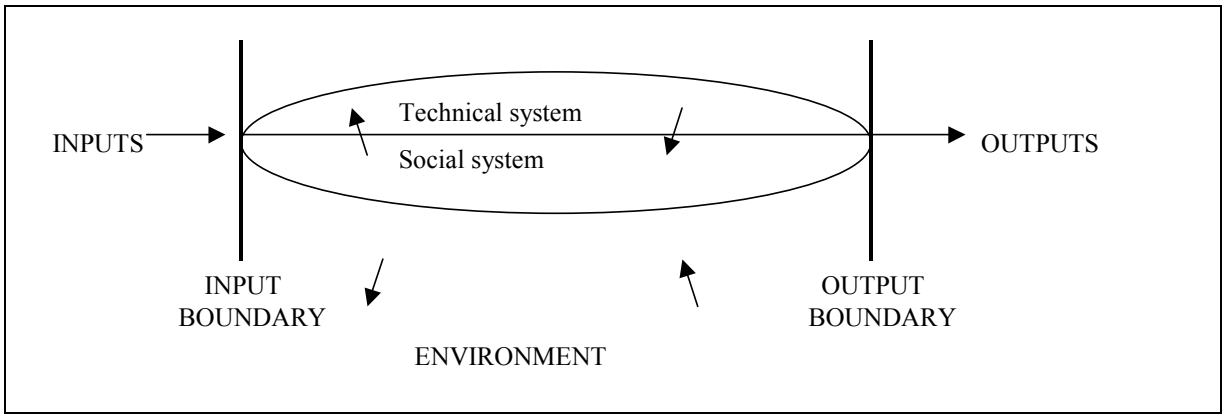
Past Successes and New Challenges

We have been very successful designing organizations in which teams take responsibility for outputs by controlling all the variances within the boundaries. This model has been most successful in production organizations, but with some work, we believe it can lead to stellar performance in knowledge-based industries as well.

Business Process Reengineering showed the weakness of this model, which fails to account for business outcomes. Most Sociotechnical Systems practitioners pointed out – correctly – that

- Business Process Reengineering failed to consider the social system and that
- Business Process Reengineering high failure rate (80% at one point) more than demonstrated its inferiority to the Sociotechnical Systems model.

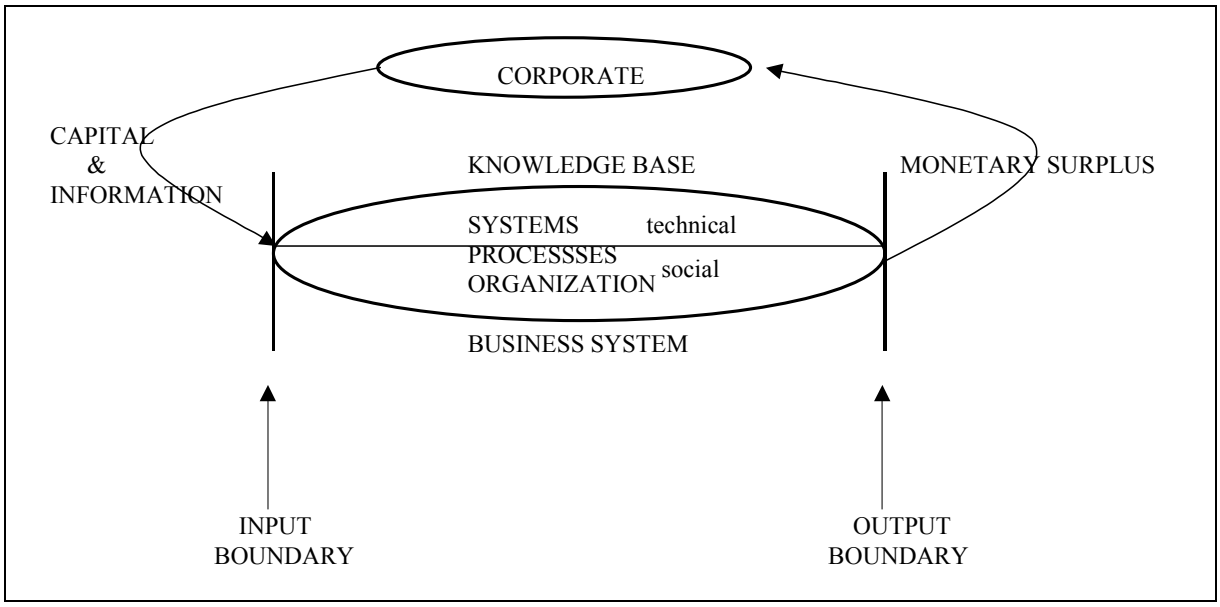
Sociotechnical Systems is based on Open Systems theory, which posits that an organization is a human system in dynamic relationship with the environment. That system has technical and social sub-systems which need to be designed with each others' needs in mind. Sociotechnical designers often use an input/output model to portray the idea graphically:



I have tried to remedy BPR shortfalls by expanding the basic STS model into a business system instead of an operating system. I took as my starting point the question:

> What does the organization look like from the point of view of a Finance Manager?

The Finance Manager does not see the inputs as raw material or unprocessed information. Rather, he or she sees the inputs into the business system as capital in the form of raw material, cash, etc. and information. The Finance Manager sees the output as a monetary surplus, more money coming out of the business system than went in as capital. The origin of that capital and information is the corporation, and the destination of the monetary surplus is likewise the corporation. We might draw that model as follows:



Inside the business system is a knowledge base which has both technical and social components. In this model, the information system is the technical system and the organization is the social system. The processes are the point of intersection of the technical and social systems. The point is to design the three components of that knowledge base to control the variances that would enable the maximum production of monetary surplus. The important measurements would be in monetary terms.

Action research on this model would yield information about appropriate organizational units and other internal boundaries, managerial and governance structure, and human resources infrastructure needed to drive organizational and business goals.

My colleagues and I are well on the way to fielding a functional platform for handling these kinds of issues. What follows is a first glimpse of our approach, and the wisdom of its tenets (wisdom gleaned over many years, and many projects, sometimes with some pain in the learning of critical lessons of the real-world).

Intertwined Social System and Technical System

The social system and the technical system are inseparably intertwined. One cannot be effective without the other. Each places constraints on the other. Each enables increased levels of performance by the other.

People and their reasoning – as well as their actions, and reactions – constitute the "social system". The social system also includes people's habits and behaviors – their attitudes and dispositions – as well as the organizational structures that reward or dissuade specific behaviors.

More traditionally, the social system encompasses a formalized power structure as depicted on organization charts – but it also include an **informal** power structure that stems form the experience, and personal leadership of specific individuals in the organization.

On the other hand, the technical system includes processes, procedures and all the material as well as intangible resources on which those processes and procedures depend.

For example, when we think of a production operation, we usually think of its technical system – that is, its mechanisms for doing work, and producing final output.

In the knowledge-based industries, however, we need to take much more care in conceptualizing these two very different systems.

To be effective, the social and technical systems must integrate and assist one another. A manufacturing operation that depend on teamwork cannot thrive in command-and-control environment where managers distrust the work of individuals, or reward behavior that is not at the team level.

Knowledge businesses where people have isolated workstations, that do not promote team-building, and team-based approached have difficulty enhancing performance under such circumstances.

Variance Analysis and related methodologies are one way of helping us transfer the concrete versions of sociotechnical systems design to the more difficult realm of knowledge-based industries.

Generalizing the Variance Analysis Approach

Variance Analysis can be generalized to provide a platform for structuring organizations that goes beyond the control of variances.

In a pure, event-driven model, there is a business process that requires some form of control. Unless Senior Managers want to be in the business of micro-management on a sustained basis, the organization must learn how to manage the process without constant intervention of the bosses.

Sociotechnical Systems provides a formalism for achieving that goal.

Although controlling "variances" is important from a quality perspective, most organizations are not working in an environment where processes are out of control.

In fact, many organizations are performing just fine with respect to basic accounting measures of revenue and profitability.

Their desire is not so much to control a variance, or turn a loss to a profit – they are generally profitable enough. What they desire is to be #1 in their markets, or deliver highest possible healthcare, achieve a new block-buster drug, distribute a laptop-per-child, or put a permanent colony on Mars.

While there may indeed by variance control problems, the management team almost surely would rather than about *exploiting opportunities for high performance* that extend beyond the more standard process metrics.

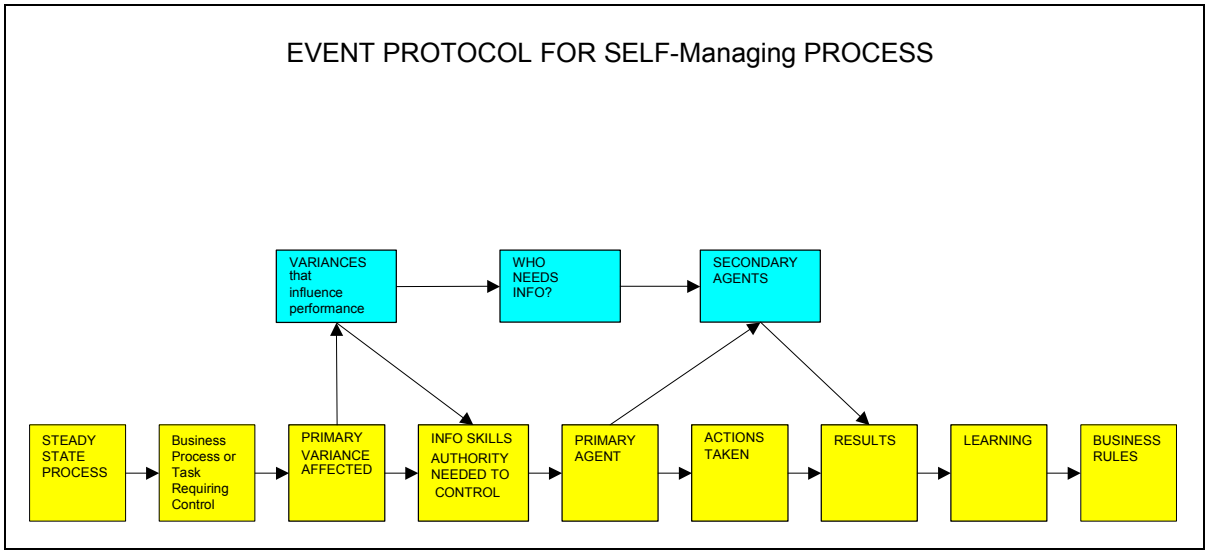
Variance Analysis for Process Management

Thus we extend the Variance Analysis concept to cover more generalized process management.

The organization establishes business processes that are "core engines" for how it achieves strategic objectives – whether this is monopolizing specific markets, or beating back competitor invasions at key customers, or reducing risk through innovative compliance mechanisms.

In a sense, the organization is a very high-level and artificial construct that knows how to define intermediate objectives and measure progress toward those objectives in a rational, and consistent manner.

Our methods provide the tools for doing a better job of this. Complex social interactions and small-group behavior determine how well the organization achieves its strategic objectives. This is the social system. By engineering the "connectivity" between the social system and the technical system, we can provide extraordinary capabilities for improving performance.



The yellow, mainline of boxes is the primary pathway that the Variance Analysis platform supports. The blue boxes represent secondary pathways that involve other agents in the variance control process.

To understand how that connectivity works, we need to consider the different kinds of work done the technical and social systems. Traditional systems designers define human activity as what the computer cannot do. They call human activity, "manual work steps," and put it in a separate swim lane in their process diagrams next to "computer work steps." But social systems work should be defined as what the computer can never do, i.e., learn, grow, adapt, change, be

creative, etc. Anything that requires routine and can be governed by an algorithm is best performed by the technical system. The technical system manages the routine, while the social system manages the exceptions.

At each iteration of organizational learning, we discover more control algorithms to enhance the technical system. The greater the repository of algorithms in the technical system, the greater the ability of the social system to encounter the next set of exceptions, raising overall system performance to a great degree.

Some of the Major Elements

Basic Premise

Current technical systems are primitive with respect to the sophistication and complexities of the social system which contain them.

While it is true that technical systems are primitive with respect to the social system, many organizations are designed to match the primitivism of the technical system, so the sophistication and learning potential of the social system remains locked up and unavailable. In too many organizations, the rule is the primacy of the technical system, leading to the sub-optimization of organizational performance.

Most organizations are designed as functional departments, geared towards limited activities and restricted data sets. Activities and decisions needed to reach strategic goals tend to be distributed over several organizational boundaries that are difficult to bridge. As such, the social system cannot use the data handling capabilities of the technical system, and the large investment in creating that capability is going underutilized.

Consider, for instance, if a people in a services company are organized in teams that managed revenue streams instead of in functional departments, and are responsible for business outcomes instead of limited tasks and routines, and are cross-trained in the necessary skills and capable of wielding the necessary authority to meet those responsibilities. Such teams are not only be able to leverage the data handling capabilities of the technical system, they can also upgrade those capabilities to the company's advantage on a continual basis. Here is one example of how designing the technical systems and social systems together can make a quantum leap in business performance.

Technical Capabilities for Key Leverage

We can usefully focus only a very narrow bandwidth of technical capabilities. There simply isn't enough power in the technical systems to support the social interactions that could lead to much higher performance.

But – if the social system is willing to leverage the technical system (i.e. by understanding it, avoiding its weaknesses, relying on its strengths) then great things are possible.

There are several touch-points where this might happen.

One of them is in the DATA HANDLING area. This is one set of functions where the technical system can provide far better performance than any comparable social system. Thus, organizational structures that are geared exploit to these kinds of functions hold great promise for increased performance.

Data Handling

Data handling involves everything the organization has to do to manage its electronic data resources. This includes: tools, functions, facilities.

It also includes all sorts of data – from the strategic level down to the smallest detail of the operating environment.

TECHNICAL IMAGE OF THE REAL WORLD
- Data model framework
- Solution model = application framework

At the strategic level there is data about markests and competitors:

Econometrics of the market,
econometrics of the firm
e.g. in terms of present news interests, Housing
Mortgages, NY Money Center banks
Competitor products and market shares

At the tactical level there is data about internal objectives, resources, projects, tasks, and capabilities:

Coordination & planning
Accounting & resource usage
Product structure
Internal resources/people – HR

At the operational level there also needs to be detailed data-about-data, otherwise these resources are scarecely usable.

What information is there in the technical system?
How do I retrieve it for MY particular use?

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