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INDUSTRIAL AUTOMATION & PROCESS CONTROL

AUTHORITARIANISM AND THE ECONOMY

It is like fish not realizing they are swimming in water. Democracy, and its associated freedom and liberty, are the water that the economy swims in. If the water is clean and fresh, the economy flourishes. When the water is scummy and filled with pollutants, the economy doesn't do as well.

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It is hard to see this. And throughout the Twentieth Century up to the present, the examples are many, even if most of them are only visible in hindsight. Authoritarian regimes always include top-down control of the economy. There are many reasons for this. Sometimes the authoritarians start meaning well, like Mussolini's Italy. Sometimes they start from a political premise, like the Stalinists in the Soviet Union (and other places). Sometimes they start from a clear notion that the state must control the means of production. Thus, the USSR and other communist states, and also the Nazis.

The theory is that top-down control provides the most efficient means of optimizing production in the economy. That's the theory. There are two things wrong with this in an authoritarian context. The first is that authoritarian regimes are massively prone to corruption. It doesn't matter whether the regime is nominally communist, or fascist, or capitalist. This resolves to, "If you aren't in with the bosses, you don't get any." So, it is important to make the requisite statements and political contributions to make sure that you are "qualified" to receive projects and largesse. The Russian Oligarchs in the post-Soviet era received their riches in proportion to their loyalty and fidelity to Vladimir Putin. And those whose fidelity became suspect lost favor and status and money accordingly. And as in many authoritarian regimes, many of them had defenestration accidents.

The same was true of the industrialists in Nazi Germany. The same was true of capitalists in Mussolini's Italy, Franco's Spain, and many other authoritarian regimes. It is true today as we

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see the Republican Party in the United States acting like any other authoritarian or totalitarian regime passing out favors to be cashed in when the Leader is re-elected.

The second thing wrong with top-down control of the economy is that it makes it extremely difficult to develop innovation. Excessive planning means that there is no room for agility in design or manufacturing. This butts up directly against the trend in modern manufacturing of speed, innovation, and agility. All of the theory of Industry 4.0 is based on that speed and innovation and agility.

Industry 4.0 and its successors are based on the unfettered use of data to enable the agility needed to be a high performance manufacturing economy.

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The truth is that agility and innovation are anathema to authoritarian regimes. Authoritarian regimes are built on stasis and stability. “Back to the good old days!” would be a great motto for an authoritarian regime. Brilliance and genius are suspect to authoritarians because they can’t be quantified or controlled. The incredible growth and diversity of the tech industries, including manufacturing and automation, over the past forty years has been made, in large part, by the willingness of even authoritarian governments in Russia and China and North Korea to leave hackers and coders mostly alone in return for reaping the benefits of their innovations. The more open and anti-authoritarian a country is, the more welcoming the country is to entrepreneurs, innovators, and geniuses of all stripes. And the more open and anti-authoritarian the country is, the more agile the economy is, because the government isn’t corrupt and controlling.

Of course, lest this sound too libertarian, it is a requirement of anti-authoritarian regimes to work to restrict, restrain, and police the companies as they acquire each other and become more authoritarian themselves.

What we have is a dialectic between authoritarianism and freedom, and high-performance manufacturing and economies are well on the line toward freedom. It is simply not possible to be both authoritarian and practice high-performance manufacturing principles. If we want to continue to have the benefits of Industry 4.0 and the Industrial Internet of Things, we need to make sure that authoritarians do not take over governments across the world. Right now, we have authoritarian governments in Russia, China, North Korea, Turkey, Hungary, an

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authoritarian political party in power in Poland and in Italy. Saudi Arabia and many Middle Eastern states are also considered authoritarian.

The fight goes on.

THE 21ST CENTURY MARKETING BLUES, Part Three

Along with the transparency we've been talking about as a modern marketing objective, there is also the opportunity to enable customer control of more of your enterprise. This means that you are allowing your customers to give you not only feedback on your products and services, but also some control over them.

This is not a new idea. It is a re-discovered idea. For centuries, smaller companies have needed the cooperation and leadership of their most important customers to produce products that were relevant and needed by their customers. It is very easy for a small company to do this...you simply ask your customers what they want, what they like, and as important, what they don't like. And then you listen to what they have to say and modify your production and engineering development programs accordingly. It works. Companies that engage in dialog with their customers--and listen to them-- gain extremely loyal customers.

It is extremely important for a small company that wants to grow to a large company to do this. As an example, let's look at Inductive Automation. Inductive Automation was a small company that grew out of a system integrator firm. They developed a new and highly robust SCADA system and even more important, they developed a way to actively involve their growing customer base in the engineering and marketing of the Ignition! product line.

Here's what they did. First, they developed a new way to license Ignition! by producing a plant wide license, instead of seat license. This encouraged their customers to find new uses around their plant for the system, and as Ignition! developed into a software platform, the fact that the license system was significantly less costly than other software systems meant that there was growing impetus to use it in new applications.

But that wasn't all Inductive Automation did. They released an independent developer's kit and a semi-open Application Program Interface (API) to enable their customers and system integrators to develop new applications that would run on the Ignition! platform. Then they began holding contests for the best Ignition! app of the year, and they allowed apps they validated to be sold as if they were factory-designed applications. Many customers and system

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integrators have developed and sold apps through the Inductive Automation “app store” and thereby created a bidirectional software engineering enterprise that Inductive Automation could not have produced or continued on its own.

But big companies have also seen the benefits of bidirectional customer interaction as well. Here we can look at Honeywell. The Honeywell User Group (HUG) is the prototypical user group in the automation and manufacturing space. Every other user group is a copy of what Honeywell produced. Honeywell’s users give considerable feedback to the company on what direction they want the product engineering to take. Every year, HUG meets to validate this bidirectionality and let the users know that they are appreciated.

But that’s not all Honeywell does. As part of the official Honeywell Users Group, Honeywell funds and assists a group of users called the User Input Subcommittee (UIS). UIS has a budget and a staff provided by Honeywell, and their remit is to direct Honeywell Engineering on upgrades and necessary changes to software and firmware. Honeywell has committed for more than thirty years now, to being led in these items by the direction of the UIS. This is, as far as I know, a unique function of Honeywell’s user group. No other user group has as much influence and authority over the direction of their vendor’s engineering and product development than the Honeywell UIS.

These two examples, one from a small company and one from a very large one, show us that a bidirectional relationship of equality between the vendor and the customer is very powerful. How powerful? In 2001, GE attempted to acquire Honeywell, and the acquisition had gone far enough that GE executives had been placed in key positions at Honeywell. On the first day of the Honeywell User Group meeting that year, the Justice Department denied permission for the merger to take place. All the GE executives simply got up and left the meeting and cleared out their offices. Honeywell was in a serious bad state.

The Steering Committee of the User Group told the remaining Honeywell executives that they would hold their companies firm as Honeywell customers until Honeywell could get its stuff back together. And so it was. Without the huge commitment of Honeywell to its users, Honeywell would probably have ceased to be a factor in automation.

So talk to your customers. At Spitzer and Boyes LLC, we have provided what we call *Mind of the Customer* analysis for companies. We use deep dive qualitative interviews to get to the core of the relationship between your customer and you. We aren’t probably the only people who can do this, but we can tell you how to do it, and how to find qualified consultants who can do it.

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The more you talk to your customers, *and the more you listen to them*, the more insightful your customer relationship management will become, and the more successful your enterprise will be.

FUTURE-PROOFING THE ENTERPRISE

Over the past year or so, we have talked about the fragility of supply chains. We have talked about the effects of conflict on manufacturing. We have talked about the effects of labor unrest on manufacturing. We continue to talk about the dangers of lapses in cyber security.

We have talked about the need for high agility and innovation in both operational technology and financial controls. The problem we have is that while operational technology is based on the collection of time-series data, financial data is not. Financial data is based on analysis of production quotas and quality and whether sales quotas are met. This as we have seen before, is a fundamental problem in manufacturing execution.

What is to be done to prevent our enterprises from falling afoul of the issues we've highlighted?

One of the great 19th Century entrepreneurs, William Hesketh Lever, founder of Lever Brothers, which became the conglomerate giant Unilever, used to say, "The conduct of successful business merely consists in doing things in a very simple way, doing them regularly and never neglecting to do them."

We can take Lever's motto as a manifesto.

Supply Chains

The simple thing to do is to collapse your supply chains. While it may be cheaper to have your electronics made in Thailand, and your equipment housings made in China, and your engineering done in Kazakhstan, the distance from your main plant to your subsidiary or worse yet, your external contractor is proportional to the danger to your enterprise. Look at all the products that are still sitting on the Dali, with its prow stuck in the remains of the Francis Scott Key Memorial Bridge in Baltimore. Make your products where you sell them and where your customers use them. The cost difference is immaterial when you have a disaster like the Dali, or like the widespread flooding in Southeast Asia that nearly killed the semiconductor industry in the early 2000s. One disaster wipes out all that book profit. The more subcontractors you have is proportional to the potential for problems. Look at what's happened with Boeing, who deliberately subcontracted the 737, 757, 767, 777, and 787 design and manufacture to a variety of companies, even spinning off a major subcontractor, Spirit Air,

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to increase the book profit on their airplanes. This has very nearly killed Boeing because nobody was looking over quality. The jury is still out on that one.

Cyber Security

After over twenty years of warnings, companies are still pretty much ignoring cyber security because they believe they can buy it off. United Health is just the most recent example. But at some point, Bob Adamski's Nightmare is going to come true, and a refinery, or a chemical plant, or a host of them, will be destroyed in a blaze of glory. And probably even then, executive management will still not be listening.

Unfortunately, the customers and the end users are bearing all the costs for these issues. United Health gave out a bunch of my private data, and the only recourse I have is to change all my emails, all my passwords, and not to business with United Health ever again. But if my stolen data is used nefariously, I have little or no recourse. United Health is pleased to offer me two years of identity protection. Right.

We need to protect our enterprises by not putting everything we can on the Internet and in the Cloud. Just because we can doesn't mean we should. If you want to defend your data, don't expose it to theft. If it costs more to operate your enterprise, think of what it will cost you to fix a major cyberblunder.

Conflict

As the war in Ukraine has clearly shown, and as the many "low intensity conflicts" around the world are showing, conflict in one place has a direct impact on the economy everywhere. The conflict in Ukraine has, for example, raised the cost of outsourcing software, as well as the global cost of grain. Many of Ukraine's best software engineers are in the army, not working on software. And some of them will never come back to work again, because they fell in battle or from disease. Conflict always costs the economy a great deal. If you don't want conflict to cost you, position your enterprise to have little or nothing to do with conflict zones. Don't do business with nation states or political groups that are dedicated to armed conflict. Make conflict expensive, not just for us but for the instigators. Armed conflict is bad for business.

Labor

Since the 1970s, management salaries have skyrocketed while lower-level employees' wages have stagnated. On an adjusted-for-inflation basis, workers now make significantly less than they did in 1970, while executives make significantly more. This has caused a number of real issues. The median income in the United States is about \$70,000 per year. The median price for a home is \$387,000. Unless your employees make significantly more than the median income, they can't easily buy a home. The median cost of an automobile is approximately \$48,000. Unless your employees make significantly more than the median income they can't easily buy a car. Food costs have risen higher than the rate of inflation since the pandemic.

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This has put your employees in a squeeze. Remember the biblical proverb, “thou shalt not muzzle the ox that treadeth out the corn, and the laborer is worthy of his reward.” If you want to keep good employees treat them like you mean it. The shameless way the delivery services tacked a huge surcharge onto the cost of delivery just so they could get away without paying their workers properly is more like what most people do. Go look at highly successful companies. They don’t do that. They treat their staff as if they mattered. Because, frankly, they do.

Agility

You need to figure out the disconnect between financial roll-ups and operations reports. Take a look at the book Peter G. Martin and I wrote in 2014, *Real Time Control of the Industrial Enterprise*.

<https://bit.ly/4ajBe5j>

The reporting path from the plant floor to the boardroom is fine for operations and time-series data. But it is broken for financial data. Peter and I made some specific recommendations as to what to do about this.

The closer your enterprise gets to making your financial data bidirectional in real time is the closer you will get to being a truly high-performance enterprise. Try it and see.

If you work on doing these few simple things in a simple way, do them regularly, and never neglect to do them, you will have a safe, successful, future-proofed enterprise.



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