THE INDUSTRIAL COMPANY IN THE YEAR 2027[1]

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Many industrialized countries have seen severe recessions over the last few years. This presentation tries to take a step beyond these problems, creating a scenario for what the world could look like in the year 2027, and how the industrial company would operate in this world. The purpose is to study what long term trends may affect corporations, so that we already today can start thinking about the kinds of strategies and organizations that are in line with future development. Obviously, the predictions are speculative, but I believe there is a core of truth in them.

I will cover two main topics and a number of loosely related ideas:

- An overview of the global economy as it stands today and in 2027
- A vision of the corporate workplace in 2027

Let me start with the global economy and use a fair amount of data to illustrate the kinds of developments we may see.

THE GLOBAL ECONOMY

Many aspects of the global economy can be explored, but I will focus on two important points. First, I will make some predictions about the economic development in the world; Second, I will say a few words about the mix of economic activity we may have in the year 2027.

Economic development

We have put together a perspective on the global economy in 2027[2] by using information from the World Bank, national statistical offices, and other sources. The assumption is that we do not have any major global setbacks such as war, famine or other difficulties.

We looked at the major economies of the world divided into three groups: North America (including Mexico, the United States, and Canada); Europe (including the

[1]This text is based on a speech given to McKinsey Nordic in Oslo, Norway on December 18, 1992.

[2]Staffan Canbäck: Regional economic power in 1991 and 2027.

members of EC and EFTA); and East, South-East, and South Asia, or ESESA (including Japan, China, India, Korea, Indonesia, Thailand and the other countries of the region). These countries constitute 75 percent of the world economy today and will likely do so, or even more, in the year 2027. Numbers I refer to in the following relate only to these three regions and exclude Eastern Europe, South America, West and Central Asia, Africa, Oceania, and Central America and the Caribbean.

Economic growth

With solid global economic growth, in line with what we have seen over the last 30 years, the three regions' gross domestic product (GDP) will grow from around 20 to 90 trillion dollars in constant PPP-adjusted[3] value between 1991 and 2027.

The GDP per capita in the three regions can be expected to grow from 6,000 to 18,000 dollars over the same time period. This means that the three regions' average standard of living (in material terms) in 2027 will be similar to what the most developed economies, such as the Scandinavian countries, enjoy today. A staggering development!

Regional power

When we look at the regional economic power, we find that North America, Europe, and ESESA today are roughly the same size, or around 6 to 7 trillion dollars each. (That ESESA already today is a slightly larger economy than Europe or North America may come as a surprise to some.) However, while the total GDP is evenly split we have to recognize that ESESA has almost 80 percent of the three regions population.

By 2027, ESESA will likely have 83 percent of the population, and the regional economic power of ESESA will represent 65 percent of the three regions GDP, if we assume two percent higher annual GDP per capita growth than in North America and Europe (a reasonable assumption if we check against the development over the last twenty years, and against peak growth in the United States and in Europe when those regions were at similar stages of development). Europe and North America split the rest more or less evenly. Thus, it is fair to say that the center of world economic activity will be within four hours flying range from Hong Kong.

Relative prosperity

If ESESA will be the dominant economic power in absolute terms, what will the relative prosperity of the regions be? Today, North America has the highest GDP per capita with Europe around 10 percent lower. ESESA's GDP per capita is around one sixth that of the Western industrialized countries.

[3]Purchasing power parity.

By 2027, North America can still be expected to have the highest GDP per capita at a level approximately twice as high as today. Europe may narrow the gap slightly. But most interesting is that ESESA may reach one third of the North American level. That is, the relative prosperity gap has been cut more than in half between ESESA and North America

TRIAD ECONOMIC POWER

	Region	1991	2027
GDP/Capita	ESESA	2,600	10,600
($)	North America	18,500	35200
	Europe	16,300	31,000
	Total Triad	5,700	14,600
Population	ESESA	2,830	4,260
(Millions)	North America	360	490
	Europe	380	400
	Total Triad	3,570	5,150
Total GDP*	ESESA	7,500	45,300
($ Billions)	North America	6,700	17,400
	Europe	6,200	12,300
	Total Triad	20,400	75,000

* PPP-adjusted
Source: Staffan Canbäck: Regional Economic Power 1991 and 2027

Wealth and Poverty

Where will the wealth and poverty be?

It will be difficult for Hong Kong and Singapore not to become the wealthiest economies in the world. They already today have a higher material standard of living than many OECD nations. The continued regional development will help them leverage their positions as centers of commerce and finance. Even a modest (by Asian standards) three percent annual growth will let them overtake the United States around 2015.

Other winners will probably include South Korea, Taiwan, Malaysia and possibly Thailand who, because of their fair standard of living already today, can reach levels similar to most Western European countries by 2027—significantly above the current U.S. level.

China and India will make tremendous progress but have a long way to go. Thus, it is unlikely that they on average will be richer than for example Greece is today.

North America and Europe will continue to enjoy high standard of livings and can expect to more or less double the current level. This is obviously a major achievement and it only pales in significance because of the tremendous growth in ESESA.

Finally, out of the Triad's total population of 3.6 Billion people in 2027, how many will enjoy a material standard of living above, let's say, 50 percent of the current U.S. average (i.e. above 11,000 dollars or Spain's current average)? This is the level where we see mass consumption of cars, white goods, and advanced home electronics as well widespread tourism.

Today, around 500 million people in the world, 80 percent of whom live in North America and Europe, enjoy this standard of living. By 2027 we can expect them to be more than 2 Billion and 1.5 Billion of them will live in ESESA.

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Let me end the discussion of economic development with a few words of caution after this wild, yet in my eyes realistic, optimism. There is a clear danger of an East–West conflict (rather than a North-South conflict). The East (centered around China) and the West (North America, Europe, and possibly Eastern Europe) will have comparable economic power, while cultures are very different. Without improved understanding of each other through education, trade, and travel, there is a high likelihood for conflict.

MIX OF ECONOMIC ACTIVITY

Apart from predicting future macroeconomic developments, it's interesting to understand what people will do. The following analyses refer to Sweden,[4] but should be roughly applicable in many industrialized countries, including the United States.

Activity—traditionally defined

Let us look at how society has evolved, and may evolve, by dividing the workplace into agriculture, industry (including mining, manufacturing, utilities, and construction), and trade & services. (We will soon modify this split by also including leisure time). With this definition agriculture represented around half of economic activity in the year 1900, industry made up 30 percent, and trade & services around one fifth.

By 1990 agriculture had declined to 4 percent, while trade & services represented 66 percent. Industry[5] made up the remaining 30 percent. Thus, we do not live in an

[4]Staffan Canbäck: Projection of hours worked in Sweden by activity

[5]Manufacturing industry is 21 of these 30 percent points

industrial society, but in a trade & services society, and we have done so for many years.[6]

By 2027 we can expect trade & services to increase its share of the economy to perhaps 73 percent, while industry slides back to 24 percent, and agriculture stays more or less at the same level.

Clearly, this is from a much larger economic base so the volume produced will increase within industry. But increased productivity will more than offset this. Thus, trade & services will continue to expand.

Activity—Modern Definition

I believe most people would agree with the above assessment and say that there is nothing new in it. To me a more interesting analysis is to define people's activities in broader terms. There is absolutely nothing that proves that the only valuable activity is economic activity even though most business managers think so.

Rather, increases in productivity have been, and will continue to be, used to increase leisure time. If we define leisure as a valuable activity, we will see some astonishing developments.

First, we observe that the highest growth sector of the economy is not trade & services, but rather the leisure sector. For example, in 1900 people worked approximately 3,100 hours per year. There was not much time for leisure. Today the average person works 1,500 hours per year, or half the level in 1900. The remaining part is today non-work, since it is hard to argue that today's men and women cannot work as much as people could around the turn of the century.

By 2027 we can expect people to work around 1,200 hours per year, given both longer and shorter trends. Thus, by 2027, 60 percent of available time will be spent at non-work and only 40 percent will be traditional work.

The traditional work will be split into trade & services 29 percent, industry 10 percent, and agriculture 1 percent. So in a way industry is becoming more and more irrelevant to the well-being of society, just as agriculture started to be many years ago.

We will always need food and we will always need products, but it will not take all that much effort to produce them.

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[6]It is a paradox that many policy makers talk about stimulating industry to pull out of recession and lower unemployment. In fact, industry peaked as a share of the economy at 42 percent already in 1966. I would argue that it is as irrelevant to ask industry to solve the problems of unemployment today, as it would be to ask agriculture to recapture the 50 percent level it held in 1900.

EVOLUTION OF THE WORKPLACE

	1900	1991	2027
Agriculture	50%	4%	3%
Industry	30%	30%	24%
Trade & services	20%	66%	73%
Total hours worked	3,100	1,480	1,190
Agriculture	50%	2%	1%
Industry	30%	15%	10%
Trade & services	20%	32%	29%
Non-work	0%	51%	60%
Total hours worked and non-worked*	3,100	3,100	3,100

* Per person and year
Source: Staffan Canbäck: Analysis of Hours Worked in Sweden by Activity

VISION OF THE INDUSTRIAL ENTERPRISE

Now that we understand that the center of economic power is moving towards Hong Kong, and that industry is not as central to society as we may think it is, let us anyway turn towards the industrial company and see what kind of development it may face.

I will touch on the industrial evolution from 1950 to 1990, the forces at work that will influence the future company and share a vision of the 2027 industrial enterprise.

Historical perspective, 1950–1990

Let us start looking at the future by reviewing the past. Many things have happened over the last 40 years that we may not be aware of. My sense is that our perspective on the industrial company is lagging actual development by perhaps 20 years.

Decline of large industrials

The first observation is that the large industrial company has gone from being the engine of a country's economy to being a cog in a large machinery. In 1953, "Engine Charley" Wilson, the President of General Motors, said that "what was good for our country was good for General Motors, and vice versa".[7] And in many respects this, was true. But today, few would argue that large business is essential to the U.S. economy. If General Motors was truly important to the U.S., then the United States would have big problems now.

Just to understand the decline in importance of the large industrial company, we should know that the average return on sales after tax for Fortune 500 industrials has

[7]U.S. Senate, Armed Forces Committee: Confirmation Hearings on Charles E. Wilson as Secretary of Defense, February 18, 1953.

declined from 10 to 6 percent over the last 25 years. We should also know that the Dow Jones share index for large industrial companies peaked in inflation-adjusted terms in 1966. And from an employment point of view, the large industrials have declined from 17 to 10 percent of the civilian working population between 1975 and 1990.[8]

Structure of industrial companies

Not only has the importance of the large industrial decreased, but the industrial company itself has changed radically. One important aspect of this is the move away from functional, hierarchical organizations towards decentralized, profit centered organizations. For example, between 1970 and 1991 the average size in terms of revenue of Swedish manufacturing companies declined 31 percent.[9] The implication of this is that a large company today is truly a collection of smaller companies.

Furthermore, the internal value-added of industrial companies has declined. In Sweden the average industrial company has reduced its value-added from 35 to 30 percent between 1970 and 1991.[10] An example is Electrolux, which today has a value-added of around 33 percent, down 9 percentage points since 1980.[11]

In summary, the industrial company has declined in importance to society, and it has downsized its activities by creating companies within the company, and by reducing value-added (the average Swedish industrial company has declined 42 percent in size between 1970 and 1991).

There is little similarity between the modern industrial company and the kinds of large, functional organizations that existed around 1950.

Forces at work

The evolution described above will continue. To understand why this is happening it is important to understand the forces at work within and around the industrial enterprise. To me, there are two key drivers: Technology and Talent.

To illustrate the importance of technology and talent, let me share my perspective on what has happened in two countries. Japan is an example of a country which has been able to harness its technological capabilities and build talent. Today the success of Japan is clear to everybody. The United Kingdom on the other hand has always had the

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[8]Reich, R. B. 1991. The work of nations: Preparing ourselves for 21st-century capitalism. New York: Alfred A. Knopf.

[9]SCB: Företagen 1992 (Table 4, SNI 3); Företagen 1971 (Table 7:1, SNI 3).

[10]ibid.

[11]Electrolux annual reports, 1991 (p.52); 1980 (p.7).

technology, but it has failed to develop its talent, both broadly through excellent education of the masses, and narrowly through managerial and engineering education.

Technology

Let's first look a bit more at the evolution of technology. Two aspects of technology are important for the future industrial company. First, computer technology has brought and will bring with it tremendous changes in the way the industrial company and its employees work: Communications will be vastly improved by computers. Telecommunications and video communications will be on each desk within 10 to 15 years, thus making it possible for the individual employee to reach anybody around the world at any time. For those issues that cannot be remotely solved, air travel will become much more efficient with better, computerized air traffic control systems.

Equally important is the continued development of information technology. Computerized databases will capture most of the information needed in society. With the expected breakthrough in artificial intelligence, it will be easy for analysts at companies to extract the right information and make fact-based decisions. Computers will make fact-based, quick decision making possible and speed up internal processes while eliminating routine work.

Second, technology for the factory will continue to develop. The most important part of this is the continued penetration of robots. So far, robots have not had enough intelligence, and have note been cost competitive enough to be used massively in manufacturing operations (essentially, they are only used in final assembly). As the cost of programming decreases and the robot manufacturers move down the learning curve, we can expect robots to take over most manufacturing jobs in industry, and within twenty years we will have completely automated factories in most advanced industrial countries, with people doing maintenance only.

Talent

Looking at the evolution of talent, we can expect current trends to continue. The general education level will be much higher in 2027 than today. This is not only true in developing countries, but we can also expect a large share of the working population of the truly advanced countries to reach a much higher level of education and skills.

The particular skill of managing companies can also be expected to take a quantum leap forward. Management as a profession, rather than an instinct, started developing at General Motors late in 1919 with the drafting of the "Organization Study" by Alfred Sloan.[12,13] But it was not until after the second world war this way of thinking

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[12] James P. Womack, Daniel T. Jones, Daniel Roos: The Machine that Changed the World (p.40).

[13]Alfred Sloan: My Years with General Motors.

penetrated Scandinavia broadly, and even today most managers are well-meaning amateurs, doing their best in an ad hoc fashion.

By 2027, we can expect the cumulative managerial know-how in Scandinavia to be three to five times bigger than today.[14]

In summary, the continued development of talent will have at least as profound an influence on the way organizations work as the technology mentioned above.

Future types of work

How will technology and talent shape the type of work people will do in the future? Broadly speaking, we have three categories of work in modern society (excluding the creative arts). *Production work* are all types of work where people serve machines, for example on assembly lines. *People work* covers work where people deal with people, for example in hospitals or restaurants. *Problem solving* work are those categories of work where people analyze situations, develop recommendations, and implement them (e.g., doctors, consultants, or maintenance workers).

In society the people workers will dominate the work force. Within industry the problem solvers will dominate, since the production people gradually will disappear because of automation and other technology improvements, and the people workers are not all that many.

Scenario for the industrial enterprise

I will make predictions at three levels. What the overall corporation will look like in the future, what type of operational reality people will work in, and what the desktop will look like.

Corporate evolution

At the corporate level I expect the structure to be quite different from today. We will see companies that look more like a global web of activities than a well structured hierarchical organization. Decentralization will go much further than today, mainly because changes in transaction costs will favor decision making at low levels in an organization.[15] We will see many more conglomerates than today, since it will become increasingly easy to manage diverse activities (remember that improved information technology and a massive accumulation of managerial experience will facilitate complicated management). Finally, we will see many more variants of ownership rather than the two we have today publicly traded shares and government-owned companies.

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[14]Staffan Canbäck: Analysis of Managerial Competence in Scandinavia.

[15] Staffan Canbäck: Of Coase and Chaos

Within these loose structures, the role of top management will change dramatically. I expect to see a rapid decline in the importance of top management. Already today we do not have the kinds of bosses that existed 30 years ago. Decisions are made much more through consensus. We can expect this to continue and maybe we will see the governance of enterprises evolving towards a system similar to the modern democracy, i.e., with several centers of power.

The role of the CEO in this kind of structure will be to serve as the guardian of heritage and the shaper of the destiny of the enterprise; to act as a portfolio manager who decides what the company should do and with what type of ownership; to hire and fire business unit managers and follow-up in the traditional sense. But no matter what, the CEO will not have the kind of power as before, and he will not be the traditional decision maker, but rather a decision shaper.

Future operations

In what direction will operations evolve? It is quite clear to me that enterprises will be located wherever suitable talent and technology is available. To be located close to raw materials or close to customers will not be important since modern information technology will make it possible to interact with these groups remotely.

Logistics costs may play a slight role but should not offset the importance of talent and technology. Thus, for a nation that wants to maintain industrial activity (and many nations may choose not to) the infrastructure has to be built in such a way that the development of talent and technology is prioritized.

The people within the future industrial enterprise will perform four essential tasks. First they will orchestrate the problem solving and make decisions on what, how and when to perform activities and production. Second, they will continue to work on tasks that involve people interactions, since machines can only substitute this up to a point. Third, they will work on all the creative aspects of the corporation (artificial intelligence is unlikely to take over these responsibilities). And fourth, people will continue to repair machines, and make sure that things work.

These activities will be carried out by people through very short cycles and with a high degree of flexibility. Those companies that survive will also have extremely high quality in all aspects of their work.

Desktop predictions

Finally, what will the typical desktop look like? People employed in the industrial enterprise will essentially work on high value-added tasks. To maximize this value-added, they will be in constant rotation and participate in many projects, very little through the line. The successful employees will build on instant reaction based on global communications and intelligent computer support. This is a fairly stressful

environment, but let us also remember that most of all, the employees of the future industrial enterprise will have lots of free time, and that work will only be a small part of the total enjoyment of life.

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The future industrial enterprise will be quite different from today, although we have some of its characteristics already. The role of industry is not to eternally increase production and tie people to boring tasks - there will not be enough demand for products, and productivity will be so high that industry cannot create enough meaningful jobs. Rather, the industrial enterprise should strive to minimize its activities, thus freeing up people's time to make them concentrate on what is really important to society, themselves and people intensive activities.

Gothenburg, December 1992