

Why So Much Commotion Around Industry 4.0?

by Andrea Andromidas

Everyone is talking about “Industrie 4.0,” a purported new industrial revolution, about the Internet of Things, Big Data, cloud-computing and the worldwide networking of all of them. If this is really an industrial revolution, it would be interesting to know what it is.

People in manufacturing industries, who have been involved in the production of digital components or even robots for decades, undoubtedly have some idea of the direction further progress is expected to take, but they are baffled as to why there has been such a commotion around the above-mentioned subjects. Extensive reports on future production processes from the Fraunhofer Institute—Europe’s largest application-oriented research organization—unfortunately do not focus on this theme, but are more concerned with the problem of volatile markets and other uncertainties. Moreover, no one can claim that the digitalization era is only beginning today, given the enormous development of digital manufacturing technology for decades now, including in other parts of the world, emphatically including Asia.

So why such a fuss about a German expression for which an English translation has not even been found? The head of Siemens, Jo Kaeser, in a Sept. 23, 2017 interview with *Spiegel*, hinted that the answer to this question is not to be found in the realm of industrial production, because it actually concerns a different kind of revolution:

Spiegel: Do traditional enterprises have enough innovative means and resiliency to call into

question their own business model and to cannibalize it if need be?

Kaeser: That will be the vital question for the German economy. How fast will it be able to adapt in an uncertain environment, which is constantly changing and rapidly? ... We are also really strong when it comes to integrating software into hardware. Now, we have to find our way to solution-oriented software business models.¹



Josef Kaeser, CEO Siemens, AG.
kremlin.ru

The explanation is given in a 2017 fact sheet from Bitkom, Germany’s digital industry association. As a member of the platform Industrie 4.0, Bitkom conducted a survey of 559 large companies (100 or more employees) on the subject of Industrie 4.0, and released the results together with recommendations in a 30-page paper. It is stated right in the introduction that 69% of all those surveyed have a totally wrong assessment of Industrie 4.0, because they assume that it involves increased efficiency for existing industrial processes.

Only 14 % were right:

Only 14% are pursuing with Industrie 4.0 first and foremost the goal of developing new business models or changing existing business models. With such a prioritization, the German economy is threatened with falling behind sooner rather than later. As reality already shows, the

1. <http://www.spiegel.de/spiegel/joe-kaeser-ueber-digitalisation-schicksalsfrage-der-wirtschaft-s-ein-a-1169382.html>

actual revolution of Industrie 4.0 does not occur in production but in the business models. Of particular importance here are digital platforms. With their data-based value added services, they act as go-betweens between producer and client, severing the customary relations between them and thus posing a serious challenge to established enterprises. In the worst case, they will be reduced to exchangeable sub-contractors, while the digital platforms can take in the lion's share of the industrial value-added.²

On page 11, the following is said of the new notion of "Internet of Things":

In the course of digitalization, the archetype of a broker has gained significantly more attention through the emergence of so-called platform enterprises. These enterprises traditionally earn their money by bringing together suppliers and demanders, and charge a fee for their service, typically from the supplier. What is special about it, is that the entire transaction, from search to selection and then up to payment, takes place on a digital platform.

The exemplary success stories ("disruptive game changers") that are cited not only in this work, but in all discussions of this kind, are the taxi company UBER, the lodgings broker Airbnb, Netflix, Google and Amazon.

The Energy Transition Serves as Testing Ground

In February 2017, a conference took place in Berlin, which was described by its organizer "Management Circle" as an exclusive meeting of executives in the energy industry. The title of the conference was: "The

Reorientation of Energy Companies." The relevant documentation states that because of the well-established "energy transition," the decentralization of production, the Internet of things and the new demands on networks, digitalization plays a central role in the energy industry.

The report includes comments from Dr. Urban Keusen of TenneT, Alf Henryk Wulf of GE Power, and Dr. Marie-Luise Wolff-Hertwig of Entega. Other participants included Michael Feist of the Hanover municipal utility company, Dr. Luge of E.ON and Andreas Mundt from the Federal Cartel Office. Alf Henryk Wulf is reported to have said that GE

wanted to use its PREDIX cloud platform to ultimately transform the corporation into a software company.

The presentation of Dr. Marie-Luise Wolff-Hertwig of Entega AG was reported to have been "groundbreaking." Her title was: "Does the Energy Branch Lack Digital Literacy?" The energy branch should be prepared, she said, to come up with entirely new service

models, because digitalization is less a technical than a social task, and demands an entirely new business culture. A quote from the summary:

Management boards have to adjust to that, because a work culture in "granite," which is often still customary practice in Germany, where the "zero-error principle" prevails and processes are standardized down to the smallest—this work culture prevents enterprises from being innovative, trying out new things, changing. We should look to Silicon Valley more often, where things are much more in flux and frequent failures are accepted. . . .

Every change on the market should be checked to see whether it could be made into a new service . . . This sector talks too much about boilers, it is said, rather than making their products "sex" . . . A basic attitude is needed that factors failure into business, and has the courage to take risks. Active entrepreneurship



Xinhua

UBER, a success story?

2. Bitkom fact sheet from June 2017 titled: "[Business models in Industrie 4.0, Using and Actively Helping to Shape Opportunities and Potentials.](#)"

means to fail in order to move on. That is missing in this sector.

For industrialists among our readers, it may be interesting to note that Dr. Wolff-Hertwig received degrees in English studies and musicology, according to *Wikipedia*, before she began climbing the management ladder.



Germany, once a proud builder of nuclear power plants, is now decommissioning its advanced power generating capacity.

mistakeably imply that something has already gone seriously wrong. The decision to opt out of nuclear energy, the subsidies fixed by law and the preferential feeding-in of so-called “green” electricity have not only led to a doubling of electricity prices, but have also driven conventional power plants into bankruptcy.

The *Frankfurter*

Allgemeine Zeitung wrote on Oct. 21, 2017:

Heading into the Post-Industrial Society!

These comments raise the burning question: What is going on here?

The fact that the leaders of the energy industry are the ones promoting the new business model is no coincidence. We will show below that there is a logical, but disastrous connection between these two very particular German inventions, Industrie 4.0 and the so-called “energy transition.” The position paper of the “Plattform Digitale Energiewelt” of the German Energy Agency from June 2016 clearly indicates that the primary purpose of the exaggerated debate on digitalization is to maintain a doomed-to-fail energy transition.

Two aspects are emphasized in the paper:

1. Digitalization is an important “enabler” for the energy transition.
2. Digitalization opens up strategic business areas in the energy sector.



Hans J. Schellnhuber

Both the first and the second of these points—and even more so both—will drive our economy into a brick wall *in the short term*. We will show below why that is the case.

Digitalization as an ‘Enabler’ For the Energy Transition

The reason why the German government uses the awkward English expression “enabler” in all its papers simply has to do with the fact they don’t want to use the German word *Retter* (“rescuer”) because that would un-

As shown by an overview of the Federal Network Agency (*Bundesnetzagentur*), energy suppliers have so far requested the shutdown of 90 power units with a total capacity of nearly 20,000 megawatts. Of that, just under 13,700 megawatts are slated to be taken off the network for good, and the operators hope the electricity price

will rise for the rest. A number of these shutdown application requests, in particular for the plants south of the Main River, were temporarily blocked by the Network Agency, due to fears of unsecured supplies.

However, the government’s plans for “de-carbonization” of the economy call for getting rid of all those plants, and creating a “decentralized energy supply instead.”

To gain an understanding of where we are headed, it is useful to look at the plans and visions of “top advisers” such as Hans J. Schellnhuber, and Jeremy Rifkin, who serve to guide both Chancellor Merkel and the EU and which will simply result in the destruction of our industrial society in favor of a post-industrial “sharing economy.”³

The buzzwords for the allegedly possible implementation of these plans are smart meter, smart grids,

3. Cf. “Die Science Fiction des Jeremy Rifkin oder: die schöne neue Welt der Öko-Kollektive,” *Neue Solidarität* 35/2017.

smart Internet, smart everything. It should be emphasized at this point that we do not intend to call into question the technology as such, for which there are certainly many sensible areas of application. The criticism is directed against the attempt, in a circuitous way, to rescue with technical means something which can no longer be rescued.

That is clearly confirmed in the “Plattform Digitale Energiewelt” of June 2016: “Digitalization Will Fundamentally and Permanently Determine the Further Development of the Energy Sector.” On page 11:

Digitalization will provide the essential solutions for being able to successfully implement the second phase of the energy transition in the strained interplay of security of supply, efficiency and environmental sustainability. It is important to integrate greater amounts of renewable energies effectively at market and system levels. That requires networking a multitude of decentralized units in order to optimize production and consumption by region and by time, by making use of the flexibility available. Innovative grid operating equipment, decentralized management approaches but also more extensive optimization and coordination of grid management over various voltage levels profit from digital solutions and allow the high level of flexibility and efficiency in further use of the grid, that is required for the integration of greater shares of renewable energies.⁴



cc/The Blackbird (Jay Black)

Homeless man in Canada.

whole transition will skyrocket electricity prices to unimaginable levels.

A leading Canadian thinktank, the Fraser Institute, issued a study in October 2017, which examines the “Green Economy” in the Canadian province of Ontario.⁵ The study not only confirms this trend, but sounds the alarm bells. It should be noted that Ontario has



windontario.ca

Windmills in Mississauga, Ontario, Canada.

served as a kind of testing ground for green energy policy outside of Germany. With the Ontario Green Energy and Green Economy Act of 2009, the decision was taken to implement the whole shebang, that is, even measures that are expected to be implemented only little by little in Germany. The study found that in addition to the drastic expansion of windmills, photovoltaic installations and biogas plants, so-called smart

technologies for homes and production facilities were introduced (the “Green Button Program”) and coal-powered plants were shut down. In a matter of a few years, the electricity price rose by 50%, resulting in an 18% decline in manufacturing output and a 28% drop in

4. Cf. https://shop.dena.de/fileadmin/denashop/media/Downloads_

[Dateien/esd/9163_Grundsatzpapier_der_Plattform_Digitale_Energiewelt.pdf](#)

5. Fraser Institute, Vancouver, Study Oct. 2017: “[Rising Electricity Costs and Declining Employment in Ontario’s Manufacturing Sector.](#)”

employment.

The Fraser Institute study draws the alarming conclusion that 64% of the manufacturing jobs lost could be attributable to rising electricity prices, and that for every new job created under the “green energy” initiative, nearly two manufacturing jobs were lost. The study states: “Ontario’s manufacturing sector accounts for almost 40% of Canada’s exports, so its decline is a matter of national concern.”

One can only hope that the Fraser Institute study will be given the attention needed, and in time to prevent a similar decline in the productive medium-sized enterprises here in Germany.

New Strategic Lines of Business?

Does the goal and scope of the green expansion deserve to be called “smart?” Are these really new viable business models?

The crucial phrase in the Bitkom fact sheet is: “As reality already shows, the actual revolution of Industrie 4.0 does not occur in production, but in the business models.”

We have already heard that business models such as those of UBER, Google, Netflix, Airbnb and a few other Internet giants could provide the basis for such success for former major energy producers. Their primary concern in the future will no longer be to generate electricity, but rather to manage the large volumes of data that are produced as a result of the dismantling of our energy systems. Under the heading “Big Data,” the “Plattform Digitale Energiewelt” states:

Large volumes of data are generated at various points in the energy world; technical units and players are constantly communicating with each other and among themselves. Big data is the gen-



Decentralized energy supply: Rooftop photovoltaic panels in Berlin.

creative commons

eration and the targeted pooling and analysis of voluminous data through the use of digital techniques. The targeted analysis of these data volumes presents a significant potential for the further development of business models. That potential can then be considerably increased by linking it to other data and with real-time assessments.

One example is the merging of current data production with additionally purchased weather forecasts and historical market data, in order to optimize one’s own generation portfolio, so that greater revenues can be generated in the power and heating markets. In the current era of digitalization, data is a valuable asset for companies. In light of the immensely voluminous data, the challenge is to

be able to create “smart data” out of big data by means of (semi) automated means of evaluation.⁶



UWI Group

40 MW solar array in Brandis, Germany.

What does that mean, simply put? Households as well as companies will have to hire a management agency in the future for their energy consumption. In Ontario, this model, which was adopted back in 2013, has been given the trendy name “the Green Button Alliance” and applies not only to electricity, but also to gas and water. The customer gives the data on his

consumption to a company, has his ecological footprint measured, and is then managed and also—no one could be so naïve as not to assume so—surveilled. In return, he enjoys the advantage of being informed of the times when the energy supply is particularly low-priced (when the wind is blowing, for example) and of being

6. See footnote 2.

given special care in the event of blackouts.

EnergyLab 2030, a project of the CDU's Economic Council, proposes this model for Germany in a report titled, "A Renewable Energy System Needs Greater Adaptability from Producers and Consumers." The report states:

With a view to expansion of the "Internet of Things" (IoT), European minimum standards on security, data interfaces and data protection should be defined to allow new business models, products and services and to reliably protect existing infrastructure against abuse.

To allow energy data to be stored and released securely, in encrypted form and nearly in real time, a platform on the model of the "U.S. Green Button Initiative" should be established. That brings transparency and lays the basis for new services and products. The owner of the data alone must be able to decide who uses his data and how.⁷

The public is led to believe that these broker agencies represent a completely new value-added chain, and that a completely new online corporate world is being created that can generate huge profits without producing anything. When was the last time we heard that? Exactly 20 years ago, reputable "experts" such as Mortimer B. Zuckerman and others were proclaiming the birth of the post-industrial society in America, that America controlled the world of Internet platforms and that the "new economy" was the new paradise. It was repeated everywhere, parrot-like, and many people invested their savings in such start-ups, but by March 2000 the "new economy" was over. Do energy producers today really hope to pull that same old rabbit out of the hat again?

This type of business model, then as now, has noth-



creative commons

Post-industrial Germany: Kalkar, former experimental fast-breeder nuclear reactor site, now an amusement park.

ing to do with creating value. It is the same old mistake that has plagued our economic theories for over 50 years: Making a lot of money does not mean creating value. Don't we see that China is investing gigantic sums in the development of the physical economy and is much better off because of that? And that the success of the Belt and Road Initiative might have something to do with that, and that the building of railways, airports, maritime ports and industrial parks actually creates real value? Why are the top managers of our previously major utilities so stupid as to assume that post-industrial Internet businesses can be more promising than an operating power plant?

But to turn to such business models in the current situation is particularly catastrophic, because those models have been devised in the context of the dismantling of one of the cheapest, safest and environment-friendly energy systems. The upshot: What is praised as a solution is doubly wrong. Neither the technology installed to rescue the energy transition, nor the post-industrial business models are smart or sexy, they are downright unprofessional and will not last long for that reason.

The great benefits of digitalization, however, will be closely linked to the development of the real economy, which does not serve monetary special interests, but people.

7. EnergyLab 2030 des Wirtschaftsrats, presented at the 15th Klausurtagung "[Energy and Environment](#)" on March 10, 2017.