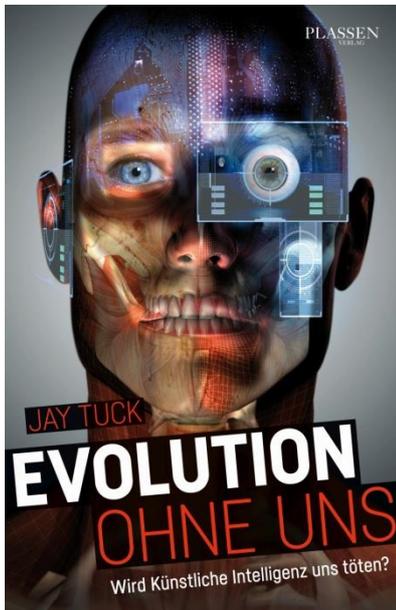


EVOLUTION WITHOUT US BY JAY TUCK

Bestseller Nr. 1 in **Technischer Fortschritt** **Sold out in three days on Amazon**

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Artificial Intelligence is “the next big thing”. It is already changing our world. It is no longer the menial jobs that are threatened, but also jobs in leadership positions. Slowly, surely, we are ceding responsibility for major sectors of our society to software, passing control in top management and marketing, federal government and financial trading to the superior capabilities of Artificial Intelligence. While the advantages are enormous, many of the greatest thinkers in Silicon Valley hold AI for a threat far greater than nuclear arms.

Mainstream media continue to focus on remote-controlled drone warfare, but the Predators and Reapers of media fame are twenty years old, yesterday’s technology. Today’s defense industry concentrates on a new era of deep-learning drones. On land, at sea and in the air, they define their own targets, fly there and destroy them. They are fully automatic and will soon operate on AI without human intervention. Artificial Intelligence is playing an ever-increasing role in military technology: intelligent drones, micro weapons, automated artillery. Many of the producers have cozy relationships with DARPA, the research arm of the US Pentagon. These developments are detailed in a dramatic new book by investigative journalist Jay Tuck (“Evolution without us – Will Artificial Intelligence kill us?”).

Here are excerpts:

0 - INTRODUCTION

We're too stupid to understand.

That's why we will probably not recognize the true threat of Artificial Intelligence until it is too late. Artificial Intelligence grows with exponential speed. The human brain cannot comprehend exponential growth. Not really. Linear growth, that is x percent per year, we can understand. But values, continually multiplied by ever increasing numbers, are quickly beyond our imagination.

Exponential growth is a concept in mathematics. Sissa Ibn Dahir, inventor of the Game of Chess, wanted to know how much rice would fit onto a chess board if the number of grains was doubled on every square. One grain of rice was placed on the first square, on the second two grains, then four, then eight, up until the 64th square continually doubling.

According to this model there would be 9.22×10^{15} grains on the last square. That is more than 9 quadrillion grains of rice (9,220,000,000,000,000,000) with a total weight of 270 million tons, a quantity of rice would could cover the state of Texas at a depth of one inch.

On the 65th square the rice would double itself again, on the 66th square once more. Exponential growth generates quantities which are hardly understandable for a normal human being. For this reason we did not understand what was happening when electronics industry began to grow at exponential speed. The consequence of such growth goes far beyond our imagination. Thus we hardly took notice as the global data storage for all humanity grew into the immeasurable. We only understood that it was developing at great speeds.

How great they were, we could not begin to comprehend.

32 – BIG DATA, BIG DANGER

33 – EAVESDROPPING ON MAMMA MERKEL

Above all else it was the eavesdropping on a mobile telephone of Chancellor Angela Merkel that launched public concern. For many Germans, it was a personal attack against their leader. If the private life of "Mama" Merkel was not respected by the allied friends in America, what is our protection? Germans began to understand what big data in today's world of espionage means: All public life is under constant government scrutiny.

The public was shocked.

Trust in the transatlantic alliance was too.

"A blatant attack on the sovereignty of a democratic state", complained Thomas Oppermann, Chairman of the Intelligence Committee in the German *Bundestag*. "Anyone this brazen will have no inhibition about eavesdropping on mobile phones and e-mails of all citizens."

"A serious breach of faith" said the Federal Security Minister Hans Peter Friedrich. "Absolutely unacceptable" cried Belgium's minister president Elio di Rupo. "Friendly nations simply should not eavesdrop upon one another", added Austria's vice chancellor Michael Spindelegger. In the press there were countless comparisons with the surveillance apparatus of East Germany.

Their outrage was hypocritical. It is the job of intelligence services to spy on politicians in friendly nations. That's true for skeptics of the US alliance as well as for US fans like Angela Merkel.

42 – LOW-TECH DATA PROTECTION

Despite close cooperation between the allied intelligence services, every government has secrets it wishes to keep secret. For this reason, the German *Bundesnachrichtendienst (BND)* stores many of its sensitive data on Israeli servers in the Negev desert. Parliamentarians from the Intelligence Committee of the German Bundestag are required to check their mobile phones in a special electronics safe before attending the Bundestag.

Particularly sensitive are the internal meetings of the Federal Cabinet. When the Chancellor swings her cast iron bell to open the meetings in the electronically secure cabinet room she wants participants to feel safe. Ministers should be able to exchange opinions and information freely. Secrecy must be guaranteed. For this reason the protocols are recorded in steno.

By hand.

With a pencil.

On paper.

Without any electronics.

To secure the protocol, the Germans have chosen a technology from the 19th Century: a pneumatic tube system. The paper protocols are rolled into thin cylindrical containers and sucked through the system into the concrete cellar rooms of the *Kanzleramt*.

The system is not exactly high-tech.

But it is secure.

66 – THE ARSENALS OF THE KILLER MACHINES

Today's modern spy is a high-speed computer. Its job is to identify the enemy in an ocean of millions of people. It searches for dangerous needles in a hay stack of the harmless. It does its work with the cognitive capabilities of Artificial Intelligence.

Espionage finds the targets.

The military hunts them down.

85 – MILITARY MOSQUITOES AND MICRO WEAPONS

"Think small" thought a colonel in the US Air Force and imagined a fleet of thousands of unmanned miniature air vehicles, flying over enemy borders. Unnoticed by ground troops, invisible for radar, the microscopic military mosquitoes slip silently over the border. Within hours, in his vision, the intelligent swarm could slip past enemy air defenses.

An enemy would be helpless.

The fleet that the colonel envisioned would consist of flying tiny robots, each smaller than a house fly, but fully flight capable and, if necessary, armed. They could attack in swarms, capable of locating foreign computers, inserting themselves into the hardware and provoking a short circuit. Kamikaze-style they could clog the rifle barrels of enemy soldiers, or spray poison into their eyes.

Fantasies in a sci-fi film?

The latest shocker from Stephen King?

No. The colonel exists. His name is Joseph A. Engelbrecht Jr. and his vision of robot insects was a part of the high level military study *Air Force 2025*, which was published under his direction at the US Air Force Academy in Colorado Springs.

105 – AI, ASSUME CONTROL

It is certainly worrisome when we see how Artificial Intelligence is assuming more and more responsibility for weapons systems. This becomes a serious threat. When we realize that Artificial Intelligence in our smart weapons are growing tighter networked – and escaping our control.

Today Artificial Intelligence is seeping deeper and deeper into our everyday lives. It flies our vacation jets and controls our urban traffic, it recommends dessert recipes and guides us through foreign cities. With every Google search and with every Amazon order it gets to know us better. Soon it will be predicting our desires.

In our homes robots are still our friends. One machine washes our shirts and socks, another washes our breakfast plates. While I'm writing these lines a household machine from iRobot is mopping the kitchen floor. My wife refers to him affectionally as "Robbi". We think he's cool.

Less cool is the knowledge that intelligence services are familiar with our wishes, even our most intimate ones. This is the world, big data, the full picture, total inventory. Theoretically the state is able to call up all of our data with a mouse click. If we don't have any terroristic habits however, it probably won't be interested. Normal citizens are the unimportant blades of grass in the gigantic hay stack of big data. For spies totally unimportant.

But there are people who are interested in every blade of grass in the hay stack.

They are powerful.

In dealings with them we should be very cautious.

Because they track us all for our entire lives.

131 – “FOLLOW THAT CAR!”

In the cinema James Bond races from the airport, chasing one of the bad guys. “Follow that car”, he yells to the taxi driver. A dramatic chase through an exotic city begins.

That is fiction.

In today’s world it is ancient history.

Automobiles are tracked silently – with navigational systems and satellites, CCTV and directional transmitter. No one is visible in the rear view. Vehicles are tracked in the distance.

In addition to the usual collection of navigational systems and GPS, that most people know, there are countless surveillance systems which can track any movement on any street.

For law enforcement and intelligence services gas stations are attractive positions for the surveillance of vehicles. The choke point through which all must pass. Sooner or later every vehicle needs fuel. Strategically placed surveillance cameras can identify stolen cars or wanted criminals, especially when the video is forwarded to a police station in real time.

166 – THE NEW CLASS SOCIETY

Constantly people are being sorted into categories. There are the valuable ones, who travel widely, consume generously, own much and spend a lot. Then there are the others.

Who swims on the top, who sinks to the bottom? The best judges of this are the silent corporations who hold our data. The marketeers of the million dollars company are always seeking the high-end consumer. The business man with the calendar full of appointments and the wallet full of credit cards. These are the true VIPs who are pampered by the data business. The gold card holder at the airport or hotel is greeted with red carpets and velvet ropes. Instead of a long wait he’s given doubled miles, instead of luggage limitations he can hope for a free limousine service.

Credit card holders with high turnover are also treated with preference. They are connected immediately to the VIP hotline and treated graciously by elite staff. Their special call centers offer abbreviated waiting times and a generous selection of special offers and bonus packages that the ordinary customer never hears about.

Target customers are sorted to the top.

Others fall to the bottom. And have to wait.

In the call centers of the world a new class society is being ...

171 – DAVID VS. GOOGLIATH

Google is one of the most powerful corporations in the world. A billion-dollar business with brutal market power. The German head quarter is located in the ABC-Strasse 19 in Hamburg. It is a playful venue with colorful walls, cheerful balloons and a relaxed working environment. Conferences were held alternatively in a subway car or the business class reconstruction of a jetliner. Umbrellas hang from the ceiling in the cafeteria, in recreation rooms employees can choose between billiard and shuffleboard, table tennis and other games. In a bubbly YouTube-video young staffers are seen dancing through the hallways and singing:

“We are happy @ Google Hamburg”. Google, a venue for the light-hearted.

A few blocks down the street sits the David ready to challenge the powerful monolith of data. Prof. Dr. Johannes Casper is chief of the data security offices of the Hamburg government. His offices are not so funny. The government official sits in a government building with antique desks, heavy bookshelves and a view of a gray court yard. It is a humorless setting in the building of the State supreme court with polished floor and rusting heaters. There is no table tennis here, no balloons and no dancing cheer leaders.

The professor has a total of fourteen staffers. And they watch over not only Google. Hamburg is also German head quarters for Facebook, Twitter and 160,000 other corporations dealing with big data. It is a heavy work load.

Professor Casper tries to project a strong image in TV talk shows and the press. Valiantly he battles internally for necessary funding. Courageously he warns for the dangers of the data monsters. But Prof. Casper is a realistic man. He knows that with his modest means he is hardly capable of limiting the growing influence of the powerful data broker.

Or of the surveillance society.

179 – THE GANGSTER AND DATA RIGHTS

In the morning hours of the 22nd of August, 2009 David Leon Riley was cruising through the suburbs of Dallas, Texas, in his Lexus. A local cop noticed that his registration had expired and stopped him. Riley's driver's license had also expired and under the hood the officer discovered two loaded revolvers, hidden in an old sock.

Riley had a problem.

He was arrested.

The police man confiscated both guns and Riley's telephone, an Instinct M800 smart phone from Samsung. On the chip there were convincing indications that David Leon Riley was a gang banger with the infamous street gang Bloods. GPS evidence also confirmed that he had been in the neighborhood

of a lethal shooting two weeks before. Ballistic tests on the revolvers confirmed his involvement. It was a clear case.

At first.

The jury returned its verdict quickly, convicting the gang banger for attempted murder, assault with a deadly weapon as well as gang membership. He was sentenced to fifteen years to life.

As Riley left the court room in his orange prison suit and leg irons no one suspected that he would be praised in the legal annals in the United States as a champion of data protection.

185 – THE BIRTH OF GOOGLE BRAIN

When Google began a research for a brain for its memory it dispatched its scouts to London. In an unobtrusive office building at 5 New Street Square they found what they were looking for. A dozen young programmers were toiling in secrecy in a company named *DeepMind*.

Papers and press releases were rare. Management said little. The corporate website was an empty screen. All one knew was that *DeepMind* was somehow involved in Artificial Intelligence.

Destruction of the human race

DeepMind was on the cutting edge of Artificial Intelligence. This was known to insiders. There research work stimulated acute interest in Mountain View, California.

When Google knocked on their door the start-up kids believed it was a miracle. The perfect dream of every start-up founder is the IPO. Or a potential buyer with deep pockets.

Google was a potential buyer. And Google had deep pockets. Googles offered over 500 million dollars for *DeepMind*.

The company owners, you will think, would jump at the offer. But they didn't. It wasn't because of money, which would have turned them into very wealthy men over night. They were concerned about the dangerous potential of their research. They demanded conditions, very unusual conditions.

190 – TORCHES AND PITCHFORKS

“Google brain was a cool name”, explains Jeff Dean, one of the pioneers. “Externally we tried to avoid the name. Outsiders could misunderstand it.”

The Google company was fully aware, that the development of a super intelligence could trigger suspicions in the general population. Another Google insider put it this way: “We didn't want an angry mob with torches and pitchforks appearing at our gates.”

In the year 2012 the project was given the new less threatening name *Deep learning*. The research was transferred from the top secret research Google X to the main campus. Managers wanted to signal normality. But the content of the department had reached a dimension that made even its own department heads a little nervous.

And Google began to develop strategies on how to deal with a being that one day would be many times smarter than the humans that invented it.

“In the end robotics will take control. It is completely clear that humanity cannot survive.”

Hans Moravic, Carnegie Mellon University

Google had always pursued a future-oriented acquisition strategy. In the past ten years the corporate giant focused on Artificial Intelligence. Systematically they purchased everything that could be useful to an AI company.

“Only a few know that Google was purchasing new companies every day,” writes blogger Jens Lehmann. He lists a Google acquisitions between February 2001 and September 2014. In his list Lehmann included 170 companies. And those were only the ones Google officially published in its press releases.

217 – THE END OF BIOLOGY

Human beings are hardly a final stage of evolution. Today we have already begun to tune our bodies and pimp our brains. Then what used to be a rapidly increasing intelligence, when the bodily shell cannot keep up. The functions of organs such as heart, kidneys or intestines can be replaced. Their tasks can be assumed by microscopic nano computers working inside our bodies. Our outer skin can be replaced by a resilient surface. Mankind morphing into machines. Not in one moment, but rather step by step, when the process is completed, we will have arrived at a new level of evolution.

Machine humans.

And the end of biology as we know it.

“The creation of a strong intelligence will be the most important transformation of this century”, Ray Kurzweil believes. “Its significance is comparable with the creation of biological life.” The moment that machines surpass biological humanity will arrive around 2029, or so he prophesizes.

Other cultures pray to gods, hoping for heaven and believe in eternal life. Kurzweil believes in the singularity. It will bring the morphing of biological humanity and electronic perfection, the hope for immortality.

But what about feelings? Love and hate, lust and passion, frustration and joy, will they still be part of the picture? Human emotions paired with super human intelligence?

Or will computer intelligence remain cold, void of feeling and inhuman?

218 - KURZWEIL'S GENTLE VISION

In the brave new world of Ray Kurzweil mankind and machine live in harmony. They are friendly creatures, who populate his future – warm, wise and rich on humor. They tell jokes, enjoy sex and make us immortal. It is a comforting and quieting vision. But in truth we must ask ourselves, why an intelligence that is a million times smarter, should submit to dumb humanity? Dog? Cat? Ant? The predictions of most AI researchers are less comforting. Their creatures are cold and calculating, invisible and out of control. They have an agenda, that we do not know. They pursue plans that we do not understand.

They will destroy us, many predict.

Without us never understanding why.

There are reasons why we don't want to deal with such nightmares.