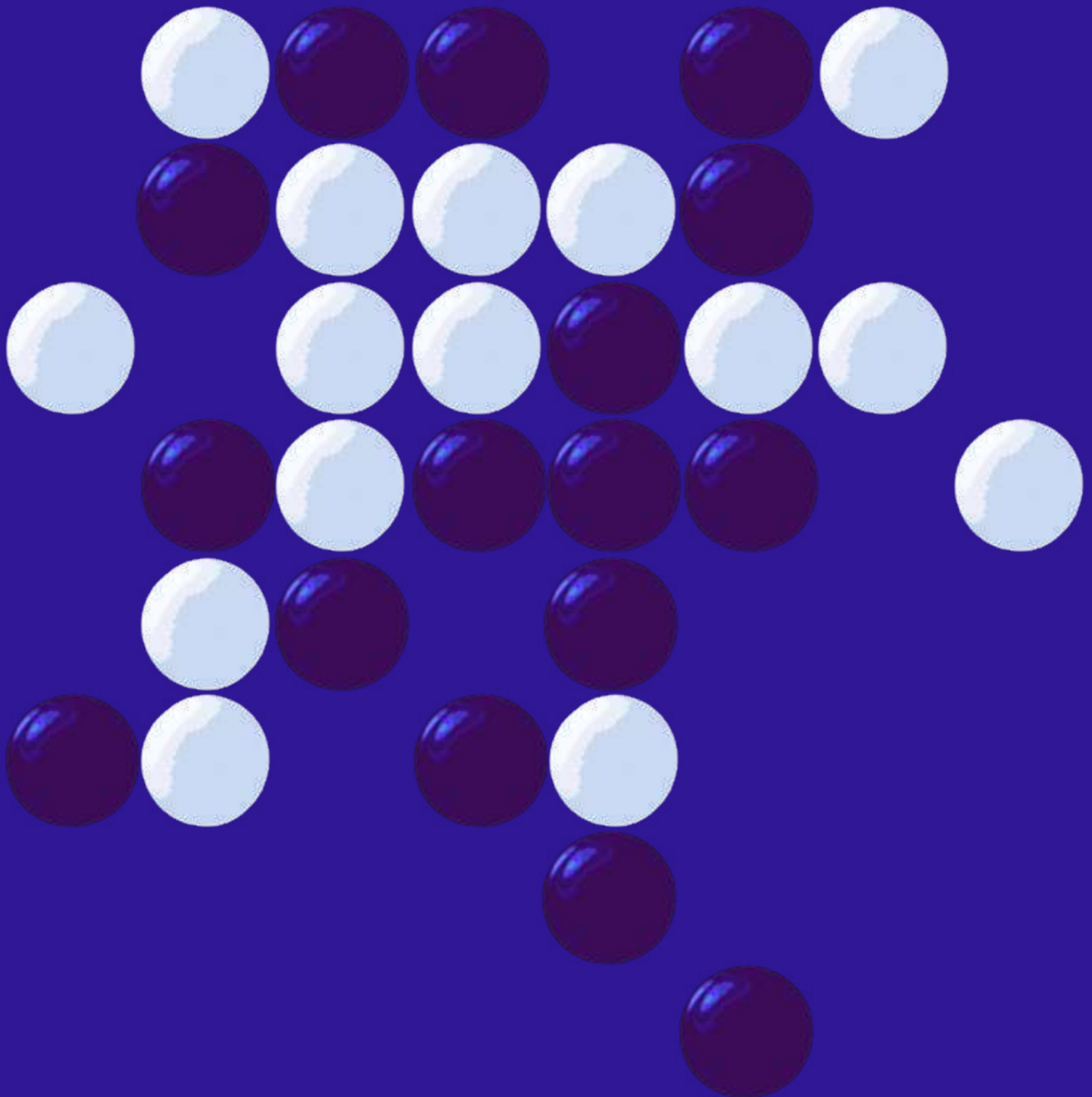


human *FORWARD*

STRATEGY

Rethinking European Power





Dr. Rebekka Reinhard,
Editor-in-Chief

Editorial

Dear Reader,

As I write these lines, Germany is about to enter its „Sommerpause“ (summer recess). Yet the nation is under immense pressure. It faces several crises at once. The country is falling behind economically and technologically. There is the crisis in the automotive industry. There are new military and hybrid threats. And there is the race between China and the United States for leadership in the development of the world's most powerful AI.

Disruptions across multiple domains are converging, creating an unprecedented sense of urgency. Geopolitical tensions intersect with technological transformation. Questions of digital sovereignty are becoming inseparable from issues of security and power. Businesses are forced to make strategic decisions even as the rules of the game continue to change. If we are serious about confronting these challenges and moving from concern to action, we need to act fast. Germany and Europe need to turn the game around. Now. The question is no longer the passive, complacent: What is going to happen? Instead, we must ask – proactively, curiously, and with determination: What should we prioritize? And: How do we get it done? This new reality presents Germany and Europe with a task of historic proportions. We must become stronger – militarily, economically, and technologically – while safeguarding our democratic values. To achieve this, we must develop the ability to think strategically together.

That is why we are interrupting the „Sommerpause.“ Following **Smart Resilience**, **Defending Europe**, and **Intelligence**, we are pleased to make another digital special edition in our *human Forward* series available free of charge.

Strategy explores, from every relevant perspective, how we can deploy our resources and capabilities more effectively to achieve our objectives. How can Germany – and Europe – develop strategic agency under conditions of permanent uncertainty? This question cannot be answered by higher defence budgets alone. It requires a new quality of thinking and decision-making. Strategy is becoming a key discipline for society as a whole. Those who can learn from crises, adapt to changing circumstances, and simultaneously create new room for manoeuvre will gain a decisive advantage.

We would like to thank our outstanding contributors from Germany, the UK, France, Belgium, Australia, and the US for delivering substantial, thought-provoking essays in record time – essays and interviews that help us move beyond paralysis and towards action. Our sincere thanks also go to our partners for their generous support, as well as to the great *human* team, Art Director Tanja Maus, and Picture Editor Maja Metz.

Munich, late June 2026

rebekka.reinhard@human-magazin.de
thomas.vasek@human-magazin.de
human-magazin.de

human Magazin, Dr. Rebekka Reinhard, Thomas Vašek
 human_magazin, rebekkareinhard

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Edward Fishman (Council on Foreign Relations, New York), one of the world's leading experts on geoeconomics: *Interview page 73*

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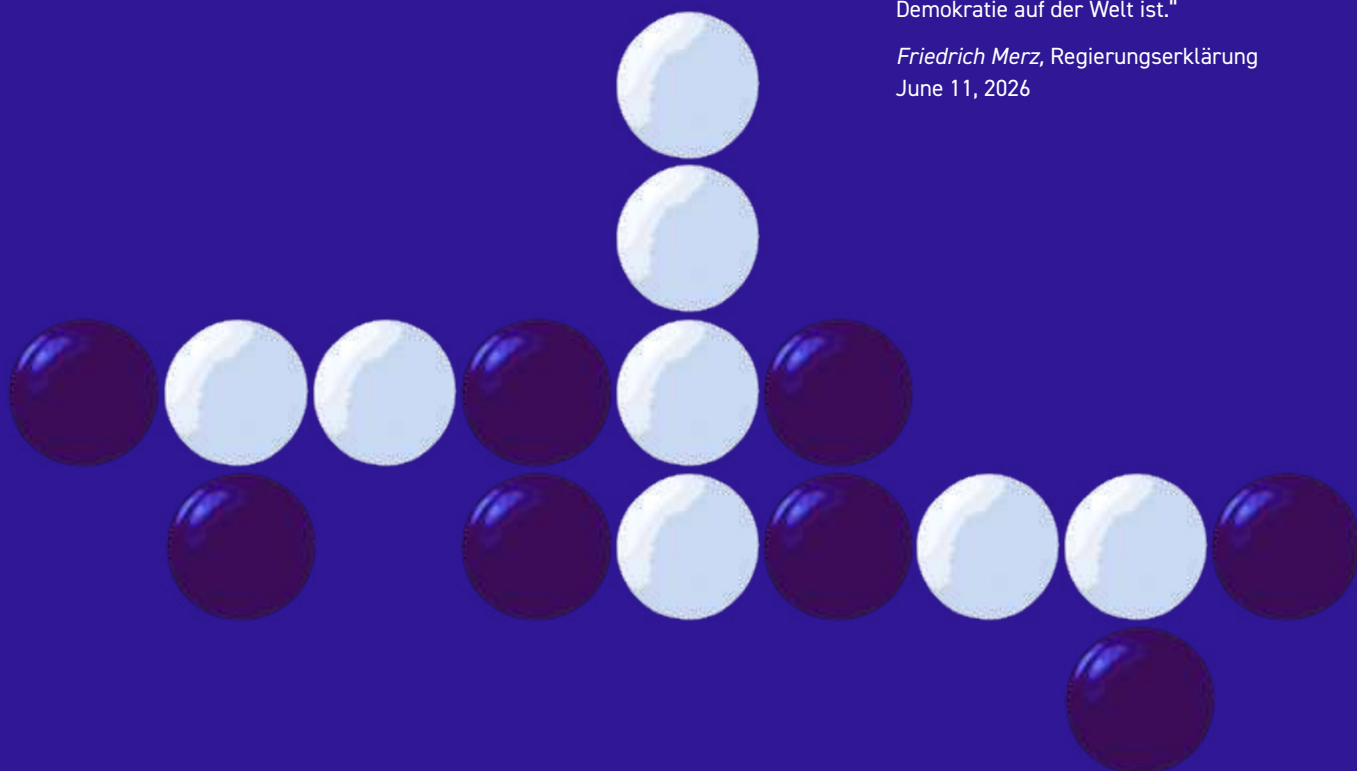


The Strait of Hormuz (computer simulation) connects the Persian Gulf to the Gulf of Oman. Once the principal sea route between Europe and India, it is now the world's most important chokepoint for oil and liquefied natural gas exports. On March 2, 2026, Iran announced that it was closing the strait.

01_ Rethinking Strategy

„Wir arbeiten heute mit und für eine neue Weltordnung, in der Europa seinen starken Platz findet, damit dieses Europa auch künftig eine Macht für Freiheit und Wohlstand, für Frieden und Demokratie auf der Welt ist.“

Friedrich Merz, Regierungserklärung
June 11, 2026



Infrastructure 2031

A European Strategy Fit for the Future

Where do our opportunities lie when AI becomes cognitive mobility? One thing is already clear: Europe needs more than AI tools. What we need is a new infrastructure that enables speed and protects dignity. Only then can humans and machines coexist for the good of humanity.

What world will we live in? Future scenarios such as “Europe 2031”, written by an international team of experts, warn today in drastic terms that Europe will sink into economic and political insignificance if it does not catch up on its technological lag. The problem with such “wake-up calls” is that they do not offer a convincing perspective. Yes, we have to catch up, we have to become stronger, and very quickly, because otherwise the USA and China will simply “eat us up”, as the economist Moritz Schularick recently said in the *Süddeutsche Zeitung*. We have long known all this.

What we lack is a positive “what for”.

Germany and Europe will hardly succeed in competing in the race between the USA and China. We have neither the necessary computing power nor the big tech companies, nor the capital. The European opportunity could lie elsewhere, however. It is an opportunity on which hardly any focus has yet been placed: We would certainly be capable of building a powerful, resilient and intelligent infrastructure for the world of tomorrow – for the co-existence of humans and AI.

Let us, in order to better understand what that could mean, switch very briefly back to May 2026, the month in which OpenAI announced a mathematical sensation. The company announced that one of its new reasoning models had solved the problem of “unit distances” in the plane, an almost 80-year-old problem of combinatorial geometry. On the “Erdős problem”, one of hundreds of open questions posed by the legendary Hungarian mathematician Paul Erdős, all humans had so far failed. >

TEXT_ **Thomas Vašek**

Thomas Vašek is co-editor-in-chief of *human*. Previously, the trained investigative journalist was, among other roles, founding editor-in-chief of the philosophy magazine *Hohe Luft* as well as of the German edition of *MIT Technology Review*.

KEY MESSAGES

- **Europe should** actively shape the coexistence of humans and AI – as a strategic infrastructure question.
- **Strategy here means** not merely deploying AI as a technology, but consciously planning its role in work, education, law, and everyday life.
- **We need** fast machine corridors as well as protected spaces for human thought and decision-making.
- **This infrastructure** must be resilient, capable of learning, and subject to democratic control.
- **The goal is** an AI world that strengthens human dignity and agency.

The proof by the AI is apparently correct. Experts see the result as a milestone in AI mathematics. But the breakthrough is also fueling a discussion that has been smoldering in the mathematical community for some time. If AI models are getting better and better at solving difficult mathematical problems: What does that mean for a field that owes its greatest advances to pure human thought?

This is less about the fear that human mathematicians will become superfluous. The question is rather how AI and humans will be able to coexist in the future. The Australian-American mathematician Terence Tao, one of the greatest in his field, recently compared the effects of AI on mathematics with the effects that the automobile had on the evolution of cities.

At the time of the introduction of the car, Tao writes on his Mastodon page, cities were designed for humans and horses. The faster cars clogged the narrow streets and threatened pedestrians. Over time, separate roads were built for cars. But the ever-denser traffic came at the expense of the environment and quality of life. Only much later was it recognized that prudent urban planning was needed to enable the coexistence of the different road users.

The old, narrow streets in Tao's metaphor correspond to the previous social infrastructure of mathematics, which includes, for example, research papers, conferences or peer-review processes. On these streets move slow, error-prone, social human beings, who sometimes get lost. Or who despair because they cannot make faster progress.

The "car", by contrast, is the AI, racing through the streets of mathematics at hellish speed, far too fast for streets and passers-by. The problem is not only the speed, the sheer efficiency with which AI today produces results en masse. It is also the fact that AI reaches the destination in a completely different way than we humans do.

Human mathematicians can therefore often not properly comprehend AI proofs. Soon the mathematical system could be flooded with AI-generated papers that no human understands anymore. But then no human mathematician could give a lecture on them either, one could learn nothing from them. That would be bad for mathematics.

For Tao, it therefore makes no sense to publish AI-generated proofs in traditional journals. That would be as if a racing car won a marathon against human runners. Impressive perhaps, but meaningless. Tao believes that his field needs an entirely new infrastructure, with "highways" for AI, but also "pedestrian-friendly" streets for humans.

Thus, one could create separate "freight corridors" to process mathematical problems en masse by AI. At the same time, however, there would need to be "parking spaces" where humans can, as it were, park the AI in order to explore the area on foot.

LEARNING FROM MATHEMATICS

Tao's car metaphor can also be transferred from mathematics to other areas, indeed to society as a whole. We need a kind of "urban planning" aimed at organizing the coexistence of humans and AI: In which areas, for which problems, must we use AI in order to reach the destination as quickly as possible? Where do we need cognitive sidewalks on which we can think and learn at human speed without being run over by an AI? And where must we protect humans and their dignity from cognitively superior machines?

The coexistence of car and human did not arise on its own. It required an infrastructure. It needed sidewalks, traffic signs, traffic lights, parking systems, driving licenses, driving schools, rest stops and much more. We need an analogous infrastructure for a future in which humans and AI can coexist with each other. >

„The Australian-American mathematician Terence Tao, one of the greatest in his field, recently compared the effects of AI on mathematics with the effects that the automobile had on the evolution of cities.“

We must build such an infrastructure now. For our competitiveness, for our security – for a good life. This is about a shift in perspective, away from AI as technology, toward the question of how we must organize our society in the future.

After the introduction of the automobile, people had decades to adjust to a new form of mobility. In the AI revolution, this is different. At breakneck speed, AI has long since been permeating our society. Even if technological development were to remain at its current level, AI would change many areas of life in the coming years, from work to healthcare to school and education.

AI is not simply a tool, but a new kind of cognitive mobility. It does not matter whether one calls this form of locomotion “thinking”. What is decisive for many applications is that one can solve problems with it, that is, get from A to B, like a mathematician from a conjecture to a proof.

But as in mathematics, in other areas too it is not only the result that counts. It is precisely not always just about simply getting quickly from A to B. Often we humans expect more. In a school essay, it is not the optimal result that matters, but the pedagogical effect. In a decision, it is also about how it came about and who was involved.

Sometimes we need the car to cover great distances or transport heavy loads. But we would miss a lot if everyone drove everywhere by car. It would be bad for health, for our lives, for the environment. It is similar with AI.

WHAT AN INTELLIGENT STRATEGY REALLY CONSISTS OF

We should harbor no illusions here. The AI of the future will be less and less dependent on human intelligence. It is therefore not a sustainable strategy to defiantly insist on the few cognitive areas in which we humans are still superior. Rather, we must face the question of how we organize traffic with superior intelligences.

Autonomous AI agents today perform tasks more and more independently, often making hundreds of decisions in the process. If an AI generates a complex mathematical proof with a single prompt or launches a multi-stage cyberattack, then it also

becomes difficult to still speak of a “collaboration” between human and machine. The US AI expert Ethan Mollick has also had this experience. In his new book, he no longer speaks of “co-intelligence”, but precisely of “co-existence”.

With a cognitively superior AI, we can neither compete, nor cooperate in a meaningful way. But we can try to use the advantages of the respective “mode of locomotion” – and “coexist” with the AI.

In some areas, we will need automated, AI-supported processes because humans are simply too slow, for example in the defense against cyberattacks. In other areas, however, the speed and scalability of AI processes can be inappropriate or even dangerous.

Masses of AI-generated legal briefs, for example, can paralyze courts and thus endanger the rule of law. On the other hand, one can set up AI-supported legal assistants for citizens that clarify smaller legal disputes automatically. With AI, masses of scientific hypotheses can be produced, the consequences of political decisions simulated, and much more.

The human-AI infrastructure of the future needs not only its own traffic rules. It also needs suitable “structural measures”; it is about “noise protection” and “traffic calming”, about “intersections”, about “bus stops” and “cycle paths” and much more. The central question here is not whether an AI can “outperform” humans. It is about meaningful co-existence, without the categories becoming mixed. Pedestrians are not cars, humans are not bots.

We need schools in which children learn to think before they use AI. We need hospitals in which patients are not reduced to an AI diagnosis. And we need public spaces, including on the internet, in which we can be sure that we are dealing with humans.

FOR A HUMAN INFRASTRUCTURE

By infrastructure we commonly understand the “substructure” (Duden), the necessary prerequisites for a functioning economy and society. One thinks of roads and bridges, of power supply, of the railway. But libraries also belong to infrastructure. Hospitals, parks, mobile communications or the fiber-optic network. >

„With a cognitively superior AI, we can neither compete, nor cooperate in a meaningful way.“

Thomas Vašek

The term infrastructure actually comes from the military, where it denotes the facilities that serve to support the armed forces. Today we mean by it all kinds of facilities, institutions or systems that, as it were, work in the background of our lives.

We take infrastructure for granted; we move within it as in a “second nature”. Only in times of crisis do we suddenly notice how dependent we are on it. Without functioning infrastructure, everyday life as a whole collapses, all the routines and habits of which modern life consists. Precisely for this reason, we experience disruptions or failures as particularly dramatic, see Deutsche Bahn. When the trains do not run, the impression quickly arises that the whole country is standing still.

As inconspicuous as it often appears: infrastructure shapes our everyday life, our social relationships, often over generations. It has always reflected various interests and ideas of a society; the historian Dirk van Laak speaks of “built history”. Infrastructure is therefore highly political. It is something that we must plan, create, develop further, often against resistance.

Around 500 billion euros is the amount of the “special infrastructure fund” with which the German federal government intends to systematically modernize the country in the coming years. A functioning infrastructure is the “basis for prosperity, social cohesion and the future viability of our country,” it says in the coalition agreement. It is about hospitals and schools as well as bridges and rails. Renovating, building, shaping the future – that is the order of the day.

As necessary as it is to renew dilapidated facilities: The danger is that with the money we build the infrastructure for the world of yesterday. With more modern means perhaps, also with AI. But for a world that seemed comparatively safe and cozy – and in which we humans were the only intelligences walking through the streets.

We must think infrastructure strategically today. It is about long-term capacity to act and future viability, about security and

deterrence through resilience. Whoever strengthens their infrastructure, according to the sober logic, raises the price for the attacker.

Under today’s economic and geopolitical conditions, that cannot mean pursuing a rigid plan. It would be wrong to build a “road network” now that we can no longer change. Rather, we need a learning and adaptable infrastructure that makes coming transformations possible in the first place. This can only be an infrastructure in which humans and AI complement each other.

A well-developed infrastructure can protect citizens and relieve them of everyday burdens. Functioning public institutions create social trust. If we want to show that AI can also serve the common good, then we must use it to build an intelligent world for people, rather than merely data centers for tech corporations.

THE WHAT-FOR OF AI IS HUMAN

We do not need another “Scenario 2031” that teaches us to be afraid. But we also do not need managers who constantly assure us how far along they already are in the AI transformation. We do not need a simulation of a tech power that we do not have. What we need is a positive narrative of how humans and AI can coexist in the future. Let us call it prosaically “Infrastructure 2031”.

Such a project would not be a state task alone. It would be a joint societal effort. One could perhaps organize it in novel public-private partnerships, also across Europe’s borders. Certainly, in the longer term we need technological autonomy for this that makes us independent of the US hyperscalers. But we cannot wait until we have powerful alternatives of our own.

We should not begin at some point – but now, to plan and build the human-AI infrastructure. What the sovereign AI solutions of the future will be, what technological “sovereignty” will mean in a few years, we shall see. What is important is that there are quick experiences of success. That things work. People must see that the country is “moving” again. >

***„We must think infrastructure strategically today.
It is about long-term capacity to act and future viability,
about security and deterrence through resilience.“***

Thomas Vašek

Human-AI infrastructure will never be perfect, just as transport infrastructure is never perfect. There will be accidents, noise pollution, congestion, and reckless speeding. We can learn from all of these experiences. This is not merely a task for public administration, but a societal design challenge. The vision could not only form the center of a coherent European AI strategy. It would also be a counter-model to a world in which AI serves only the omnipotence fantasies of the tech billionaires. The growing resistance to AI is ignited by the gigantic data centers that proliferate, especially in the USA. From the perspective of protesters, there is no more obvious symbol of a machine world that is as hostile to humans as it is harmful to the climate. The analogy to resistance against the combustion-engine car is obvious.

A future-proof, sustainable infrastructure has human dignity in view. It is designed to expand human possibilities, with and without AI. In the shaping of such a world there may also lie the chance to create a new sense of cohesion.

It is no coincidence that functioning infrastructure is regarded as a sign of modernity and good governance. Whatever else one may think about China, its trains are famously fast and practically always on time. Europe's ambition should be to build the most intelligent and, at the same time, the most livable infrastructure in human history. This applies all the more to Germany, the notoriously car-centric country.

For many today, the automobile no longer has the status it once had. Many young people no longer want to own one at all. The German auto industry, once so strong, could break apart over people's changed mobility needs. The winners could be US or Chinese robotaxi providers.

The AI world of tomorrow will be shaped by those who have an infrastructure to offer for new forms of cognitive mobility. "Freight corridors" for superior machines that produce results en masse and at breakneck speed. But also "sidewalks" for humans. In short, a "pedestrian-friendly" infrastructure for a world in which humans and AI unfold their respective abilities for the benefit of all. This "pedestrian-friendly" world could – and should – one day be Europe. ■

*„A future-proof, sustainable infrastructure
has human dignity in view.“*

Thomas Vašek

Strategic Autonomy: Securing Europe's Future

To remain capable of acting in an increasingly uncertain world, Europe must bring together its economic, technological, and security strengths more effectively.

The European Commission expects EU growth to reach only 1.1% in 2026 (European Commission, 21 May 2026). The United States attracted approximately USD 285.9 billion in private investment in artificial intelligence, while private AI investment in Europe amounted to only around USD 20.9 billion (Stanford University HAI – AI Index Report 2026, Economy chapter).

These figures illustrate the extent to which Europe is under pressure in key areas shaping the future: economically, technologically, and geopolitically. Long-standing certainties are losing their viability in the face of wars and crises, geopolitical rivalries, technological disruption, economic dependencies, and social polarization. For decades, Europe was able to rely on security through alliances, prosperity through open markets, and stability through international rules. These assumptions have been shaken. In their place, a world of permanent uncertainty has emerged – one in which power politics is becoming increasingly visible, dependencies are deliberately exploited, and technological control determines the capacity to act.

When the foundation of a house begins to crumble, everything built upon it risks collapse unless a comprehensive renovation takes place – and unless that renovation is carried out rapidly and thoroughly despite a shortage of skilled workers. Europe finds itself in precisely such a strategic reality test. The institutional response to the current situation often remains slow and hesitant, shaped by constant disputes over competencies between the EU and its member states. Short-term national self-interest >

TEXT_ Timo Blenk, Christina Schäfer

Dr. Timo Blenk is Senior Partner and CEO of Agora Strategy Group AG, a strategy consultancy that emerged from the Munich Security Conference. A geopolitical expert, he advises industrial companies on global trends, market entry strategies, and the optimization of procurement and production architectures.

Christina Schäfer is a Senior Consultant at Agora Strategy Group, where she supports companies in anticipating geopolitical risks and building resilience across supply chains and business models. Prior to joining the firm, she worked in risk advisory at PwC and at the German Federal Foreign Office. She completed her master's degree at Sciences Po Paris.

KEY MESSAGES

- **Strategic autonomy** means freedom to act – not isolation.
- **European security** encompasses defence, cybersecurity, critical infrastructure, and crisis preparedness.
- **Technological sovereignty** in AI, data, cloud infrastructure, and semiconductors is becoming a decisive factor of power.
- **Security of supply in energy, raw materials, and pharmaceuticals** requires coordinated European strategies.
- **Companies are key actors** in strengthening resilience, competitiveness, and Europe's capacity to act.

frequently overshadows long-term political stability. The failure of the joint Future Combat Air System (FCAS) project is the latest example. The key question is therefore this: How can Europe move from talking to acting, so that in a world dominated by power, speed, dependencies, and technological control, it does not become a pawn of geopolitical tides?

STRATEGY IS BECOMING EUROPE'S CORE CAPABILITY

The answer does not lie in larger budgets alone. Nor is it about predicting the future with precision. The decisive factor in successful strategy is the ability to align objectives, resources, and priorities in a way that enables Europe to remain capable of acting even under pressure and uncertainty.

This applies equally to politics and business. In our daily work with companies, we clearly see how strongly geopolitical developments now shape strategic and operational decisions. What is true for companies is equally true, in a different form, for Europe: information alone does not create an advantage. Strategic capability emerges only when analysis, decision-making, and implementation come together.

Europe starts from a position of considerable strength: industrial capabilities and expertise, scientific excellence, regulatory experience, political institutions, societal resources, and a values-based foundation that continues to carry international significance. The central challenge lies in strategically connecting these capabilities.

STRATEGIC AUTONOMY MEANS FREEDOM TO ACT

“Strategic autonomy” should not be misunderstood as isolationism, protectionism, or anti-Americanism. It means aligning Europe's strengths around common objectives and being able to

defend European interests, values, and security needs even when external pressure increases. Close partnerships remain essential. Precisely for that reason, however, Europe's own strength becomes increasingly important: the ability to be a reliable partner does not arise from dependency but from the capacity to act. Those who can make their own contributions, bear their own risks, and define their own priorities create resilient alliances.

Europe's capacity to act has several dimensions:

- It includes external security, encompassing the expansion of military capabilities, deterrence, and the ability to operate across the broader security environment. Support for Ukraine has demonstrated that only in this way can Europe retain strategic freedom of action in security policy, even when its position does not fully align with that of the United States.
- It also includes internal security: the protection of critical infrastructure, counter-drone capabilities, crisis preparedness, and economic stability. The impact of drone sightings over European airports on air traffic provides just one example of clear shortcomings in this area.
- It includes cybersecurity and digital sovereignty. Data, cloud infrastructures, AI systems, software, and communications networks determine whether Europe remains functional in times of crisis. Initial EU proposals to give preference to European cloud and AI providers in public procurement point in the right direction.
- And it includes security of supply. Energy, raw materials, semiconductors, pharmaceuticals, space infrastructure, and key industrial capacities are no longer merely economic issues.

The importance of security of supply becomes particularly evident in the area of critical raw materials. With Project Vault, the United States has already begun strategically stockpiling critical raw materials to prepare for potential supply-chain disruptions. China controls key segments of global raw-material and processing chains and deliberately uses export restrictions as a political instrument. The lesson for Europe is clear: security of supply cannot be guaranteed by market mechanisms alone. It requires closer cooperation between government and industry, clear priorities, and investment-friendly framework conditions.

Space infrastructure also offers enormous potential for Germany and Europe to strengthen their independence and reduce dependencies in telecommunications and navigation. At the same time, satellites can play a crucial role in enhancing resilience in both internal and external security. >

*“What is true for companies
is equally true, in a
different form, for Europe:
information alone does
not create an advantage.”*

Timo Blenk und Christina Schäfer

RETHINKING POWER

Ultimately, however, Europe's strength and strategic autonomy also depend on a broader societal understanding of Europe as a global power – one that extends beyond politics and includes businesses and society as a whole.

This places the question of European power in a new light. “Rethinking European Power” means understanding power not only in its traditional forms of military and economic strength. Today, power also means sovereignty over data, reliable access to energy, chips, and AI models, as well as social cohesion during times of crisis. In a world where states increasingly exploit asymmetric dependencies, interdependence can no longer automatically be assumed to foster peace.

COMPANIES ARE MORE THAN MARKET ACTORS

In this environment, companies play a new role. They are no longer merely market actors; they are increasingly geopolitical actors. Their decisions influence the resilience of entire economies. With this comes greater responsibility. A company that reduces critical dependencies, anticipates technological risks, and integrates geopolitical factors into decision-making processes not only strengthens its own competitiveness. It also contributes to Europe's security of supply and overall capacity to act.

European power in the twenty-first century will therefore emerge when security, technology, business, and society are considered together across different actors – from governments to companies. This requires new dimensions of strategic thinking. “Rethinking European Power” invites us to reassess Europe's potential and translate it into effective action. For Europe's future will not be determined solely by the values it upholds, but also by whether it develops the capabilities required to protect those values in a more demanding world. ■

“Companies are no longer merely market actors; they are increasingly geopolitical actors.”

Timo Blenk und Christina Schäfer

A middle-aged man with a grey beard and glasses, wearing a dark blue pinstripe suit, a light blue shirt, and a red patterned tie, is sitting at a red metal table outdoors. He is smiling and looking towards the camera. The background shows rows of red metal chairs and tables, suggesting an outdoor cafe or terrace setting.

“Europe’s Task Is to Hold the World Together”

Europe possesses economic strength, diplomatic influence, and shared interests. What is often lacking is strategic consistency. Sven Biscop explains why Europe must learn to act like a great power – without abandoning its values.

Sven Biscop, your last book argues that the so called “new world order” is not actually that new. What do many commentators misunderstand about the current geopolitical moment?

Sven Biscop: Many observers today label everything as “new” without distinguishing between what has truly changed and what has essentially remained the same. Multipolarity, for example, is not new at all. At the latest, we have lived in a multipolar world since the end of the Cold War. One could even argue that already in the 1970s there were several economic poles: the United States, the European Economic Community, the Soviet Union, and Japan. At that time, not yet China. The dynamic among great powers is not new either. States compete for markets, resources, influence, and partners. They cooperate, rival with each other, or sometimes move toward conflict. That has shaped international politics for centuries. What changed in Europe was mainly the illusion that this logic had somehow disappeared. It is therefore important to distinguish between the structure of the world and the order of the world. Multipolarity describes the structure. Order emerges from rules and institutions that try to regulate relations among powers. That order is now under severe pressure. The United Nations still exists, but its authority is weakening. For Europe, this is particularly dangerous because we depend more than others on open trade routes and stable international rules.

What exactly defines a great power today?

In the 21st century, a great power means global reach. A great power has worldwide interests, global ambitions, and the ability to exert influence on a global scale. That clearly applies to the

United States and China. I would also still include Russia, although its actual strength is often overestimated. Then there is Europe. Through the European Union, Europe possesses enormous economic and diplomatic reach. European interests and European influence are present almost everywhere in the world. Militarily, however, we are not comparable to the United States.

Below that level, you have important regional powers such as India, Japan, Turkey, or Brazil. These countries may play a global role in certain areas or through forums like the BRICS, but overall the gap between them and the true great powers remains substantial.

Terms like strategy and geopolitics are used almost everywhere today, often in an inflationary way. Where do you see the biggest conceptual misunderstandings?

Many people confuse geopolitics with strategy. For me, strategy always starts with interests. What do I need to protect? From there you define objectives, instruments, and means. Grand strategy concerns the vital ends that a state has to achieve in order to assure the survival of its chosen way of life, for which if necessary it will mobilise all instruments (the ways) and resources (the means) at its disposal. Geopolitics, by contrast, refers to the geographic framework within which states operate. Where is a country located? Where do its imports come from? Where do its exports go? Who are its partners and rivals? These factors shape strategic options, but they do not determine them completely. The United Kingdom is a very good example. Geographically, Britain has always been an island close to the European continent. Yet this pro-

INTERVIEW_ *Sven Biscop*

Prof. Dr. Sven Biscop is the acting director-general of the Egmont – Royal Institute of International Relations in Brussels, and a professor at Ghent University. He is a member of the Royal Academy of Overseas Sciences of Belgium, and an honorary fellow of the European Security and Defence College. He is the author of *This is not a New World Order (2024)* and *Grand Strategy in 10 Words (2021)*

KEY MESSAGES

- **Multipolarity is not a new phenomenon;** what is new is Europe's realization that power politics has returned.
- **Strategy begins with interests,** not with morality or geography.
- **Europe should understand itself as an autonomous pole** in a multipolar world and formulate its own strategic project.
- **Europe's task is** to preserve the rules-based international order and enable international cooperation.
- **To do so, Europe needs geoeconomic power,** military capability, and the willingness to shape events proactively rather than merely react to crises.

duced very different grand strategies over time. Sometimes Britain focused on naval power and empire. At other times it acted as the offshore balancer in European politics.

Strategy is therefore shaped not only by geography, but also by demography, technology, resources, and political culture. That is why I find it problematic when everything today is described as “geopolitical.” Even economic competition with China is often framed in geopolitical terms, although many of the issues rather concern markets, industrial policy, and international rules.

What makes a successful grand strategy in your view?

First of all, a grand strategy must be realistic. It has to start from actual capabilities and not from wishful thinking. It also requires priorities. No actor today can be strong everywhere at the same time. And finally, strategy requires political consistency. Europe is often very ambitious rhetorically, but far less willing to make the necessary political choices. That is frequently where the real weakness lies.

In your book, you describe characteristics of a successful grand strategy. Which of them do you consider the most important?

I think the most important characteristic is simplicity. Very often the beauty of a scientific theory lies in its simplicity, and I believe the same applies to grand strategy. At its core, a grand strategy should express a relatively simple and intuitive idea. It should be understandable to every informed citizen.

So slogans like “America First,” whether one agrees with them or not, are strategically effective because of their simplicity?

Yes, although you still need to define what exactly they mean. Historical strategies often relied on very simple

“Europe is often very ambitious rhetorically, but less willing to make the necessary political choices.”

Sven Biscop

formulations. During the Second World War, the United Kingdom and the United States adopted “Germany First.” During the Cold War, the central concept became “containment.” Of course, a single word always leaves room for interpretation. Strategy is never absolute. But if the central idea is intuitive, then people are more likely to integrate it into political thinking and daily practice.

How would you describe European strategic culture compared to more classical great powers like the United States? Some critics even argue that Europe has no strategic culture at all.

I would disagree with that. Europe does have a strategic culture, but it is a composite strategic culture. The European Union is not a single state. It consists of many nations, each with its own historical traditions and strategic habits.

At the same time, a collective European strategic culture has gradually emerged through both the European Union and NATO. Naturally, this process develops more slowly than in a nation state. European foreign and defence policy in its current form has only existed since the Maastricht Treaty entered into force in 1993.

There are nevertheless some clear characteristics. Europe traditionally places strong emphasis on international law, multilateral cooperation, partner-

ships, and comprehensive approaches that combine political, economic, and security instruments.

What remains less defined is Europe's collective culture of crisis response. Europeans generally know what they do not want to do. We are not inclined to believe that every crisis can be solved through military force. But there is still less consensus on what proactive European crisis management should actually look like.

How would you assess Europe's hesitant role in the Iran war from a strategic perspective?

I think many people have forgotten the history here. Until Donald Trump withdrew from the nuclear agreement, the European strategy toward Iran was engagement. Trump effectively destroyed that framework and pushed Europe into a different position. The fact that we now have almost no meaningful relationship with Iran was not originally Europe's choice.

Today this creates a strange ambiguity. European leaders say they want the war to end and negotiations to begin, but at the same time many act as if talking to the current Iranian regime were impossible. Strategically, that makes little sense. If you want an agreement now, you will have to negotiate with the government that actually exists. More broadly, Europe often falls into a reactive mode because crises >

are driven by others. Trump forced Europe into reacting instead of shaping events proactively. We saw similar dynamics in the Middle East. Some European countries provided air defence support to Gulf partners, but there was no coherent collective European response.

Too often European leaders wait for outcomes instead of trying to shape them.

That is the opposite of strategy.

What is, in your view, the relationship between grand strategy and values?

The fundamental purpose of grand strategy is survival. Not only the survival of the state and its territory, but also the survival of a society and its way of life. Naturally, that includes values. The primary objective of grand strategy is therefore not to transform other societies. It is first of all to preserve your own. If there is a conflict between defending ourselves and promoting our values abroad, then defending ourselves must take priority.

At the same time, I believe a democracy should never violate its own values in its external actions. You can cooperate with countries that hold very different values, as long as such cooperation does not force you to betray your own principles. There is also an important role for solidarity. Grand strategy is ultimately driven by self interest, but solidarity can serve as a corrective to a purely cynical realpolitik approach. Supporting others is sometimes a political choice even when immediate interests are not directly at stake.

You place strong emphasis on realism and rationality. How should democratic societies deal with authoritarian powers?

Democracies must be able to cooperate with any state whenever their interests require it. That includes authoritarian

“Europe now needs its own strategic narrative. We have to see ourselves as one pole in a multipolar world.”

Sven Biscop

powers. The key principle is that, in cooperating with them, we should not violate our own values.

Of course authoritarian governments may violate values that Europeans consider fundamental. The important thing is that we do not become complicit in those violations ourselves. There are often grey zones, and these questions are rarely simple, but that should remain the guiding principle. If Europe makes ideological agreement a precondition for all cooperation, it risks paralyzing itself strategically.

So Europe should not interfere in the internal affairs of powers like China?

The objective should be to find a modus vivendi with China, meaning an agreement on certain rules of coexistence. Europe has very limited leverage over how China governs its own society. That does not mean we cannot criticise China when it violates international agreements it has signed. But making internal political change in China a precondition for cooperation would be unrealistic. If you connect every issue to every other issue, you eventually end up unable to act at all.

What role does empathy play in strategy? Not empathy in the sentimental sense, but in the sense of understanding how others perceive the world.

I think that is absolutely essential. A strategist has to understand how the other side sees the world, how they

define their own interests, and why they behave the way they do. That does not mean you have to agree with them. But you need to understand their motivations in order to anticipate what they may do next. Reading intentions is probably the most difficult task in international politics.

Could you give an example? What do you look for as a strategist in conflicts such as Iran, the United States, Israel, or China?

You have to ask yourself what exactly the other actor is trying to achieve and why. That requires historical understanding. You need to know where a country comes from politically and strategically. Take China, for example. Many in the West automatically assume China seeks world domination. But if you look at Chinese history and strategic thinking, you may conclude that China actually sees itself in a defensive position, even if it often uses very assertive tactics. That distinction is important. A state can feel strategically vulnerable while still behaving offensively. Understanding that difference is crucial if you want to interpret actions correctly.

Let us come to your own proposal for a European grand strategy. What is the core idea behind it?

The first step in any grand strategy is to define your role in the world. For a long time, Europe effectively defined its role by saying: we are allies of the United >

States. That is no longer sufficient. Europe now needs its own strategic narrative. We have to see ourselves as one pole in a multipolar world. The Americans have a project for the world. China has one. Russia has one as well. Europe also needs a project of its own. In very simple terms, I would describe the European project as trying to keep the world together rather than to create an exclusive sphere of influence.

What exactly do you mean by “keeping the world together”?

Europe’s strategic project is not imperial domination. It is preserving as much as possible of the multilateral, rules based international order. Institutions like the United Nations, the WTO, and the IMF remain vital for Europe’s interests. Europe depends heavily on an open international system in which states can trade, cooperate, and interact under common rules. That order is increasingly under pressure, and Europe therefore has a direct strategic interest in defending it.

I often hear people argue that Europe should join a coalition of middle powers. I disagree with that. Europe is not Canada. Europe is already a great power because of its economic weight and political presence. The real problem is that Europe does not consistently act like one. What we need is clarity. Europe should openly state that it is a great power with its own project for the world. Our preferred approach will usually be cooperation and mutually beneficial arrangements. But at the same time, Europe must also be prepared to use hard power if necessary to defend its interests.

And how would that approach translate into concrete policy?

First, Europe needs a genuine geoeco-

“Europe needs leadership, and Germany is indispensable to that effort. Personally, I am not afraid of a stronger Germany.”

Sven Biscop

nomie strategy. We should identify the areas where others depend on us economically and be willing to use that leverage when necessary.

Second, Europe must give Ukraine a clear European future, as a member of the EU, and credible security guarantees. Third, we need to build a fully European pillar within NATO so that Europe becomes capable of defending itself. And more broadly, Europe must finally start acting strategically across different theatres instead of merely reacting to crises created by others.

Europe’s identity is deeply rooted in history, culture, and democratic traditions. Do such ideas play a role in a grand strategy?

Of course they matter. Grand strategy is ultimately about preserving a way of life. Europe’s democratic traditions, political culture, and historical experience are part of what we seek to defend. But when I ask “Who am I?” in strategic terms, I primarily mean: what role do we want to play on the global stage? That is the strategic translation of identity into action.

Finally, what message would you send specifically to Germany?

I would like to see Germany confidently take a leading role in Europe, together with France, Britain, and Poland. Europe needs leadership, and Germany is indispensable to that effort. Personally, I am

not afraid of a stronger Germany. In Belgium, at least, the so called “German question” is not really an issue anymore. The real challenge today is not excessive German strength, but whether Europe’s major countries are willing to lead strategically at all. ■

“Human Decision-Making Always Carries Some Degree of Irrationality”

What if the greatest threat to any strategy is not the opponent, but our own overconfidence? Sir Lawrence Freedman explains why wars are often rooted in misjudgments – and why successful strategists must learn to live with uncertainty.

Sir Lawrence, what is strategy?

Sir Lawrence Freedman: There are two main ways of thinking about strategy. The first is the official sense – when governments or organizations declare they have a “strategy.” These documents usually describe priorities, objectives, and perceived advantages against competitors, rivals, or allies. They can be useful, but they have a short shelf life because reality quickly changes. The second, and my preferred approach, is to see strategy as purposeful action in the face of uncertainty. A plan assumes you know your destination and the exact steps to get there. But in real life, things rarely unfold that neatly. People act unpredictably, circumstances shift, and unforeseen problems arise. Strategy,

therefore, is about how you move forward stage by stage, adapting as you go. Take Ukraine. When the invasion began, the immediate strategy was defense, not long-term victory. Later, as the situation stabilized, the goal became liberation. And when the limits of that were reached, the strategic focus shifted again – toward sustaining the fight, negotiating, or preparing for a long haul. Each stage demands a different response. That’s the essence of adaptive strategy.

Would you say, then, that strategy is more of an art than a science?

Yes, I would. People try to make it scientific – using quantitative analysis and data – but uncertainty always intrudes. Judgement and creativity are indis-



INTERVIEW_ Sir Lawrence Freedman

Prof. Sir Lawrence Freedman is Emeritus Professor of War Studies at King's College London, where he taught from 1982 to 2014 and served as Vice Principal from 2003 to 2013. Books: *Command: The Politics of Military Operations From Korea to Ukraine* and *The Future of War: A History and Strategy*. A History (2013), among other works. He co-authors the substack Comment is Freed.

KEY MESSAGES

- **Strategy** is the ability to pursue objectives under conditions of uncertainty and to adapt to changing circumstances.
- **Coalitions, resilience**, and the intelligent use of interdependencies are often more effective instruments of power than military superiority alone.
- **Goeconomics** makes supply chains, technology, energy, and trade central components of strategic thinking.
- **Europe's strength** lies in its collective economic and political weight.
- **The greatest strategic surprises** arise from human misjudgments, overconfidence, and irrational decisions by political leaders.

pensable. Strategy often involves finding imaginative ways around problems, whether in politics, business, or war. That's why I like the idea of strategy as "creating power." It's about making resources and capabilities achieve more than they otherwise might. Predictive models based purely on the balance of power suggest outcomes, but strategy can overturn those predictions. An underdog, if clever enough, can prevail. That creative dimension is why I describe strategy as an art.

In your book on strategy, which spans from biblical times to modern business, do you find there are universal features of strategy?

Yes, certain patterns recur throughout history. Coalitions are a good example. If you are much stronger than your opponent, strategy is less demanding – you can overwhelm them. But when power is more equal, or when you are weaker, strategy becomes much harder. Then you have two main options: outwit your opponent with cunning or build alliances to strengthen your position. Cunning – stratagems, surprise moves, deception – can certainly help. But it has limits: once your opponent learns your tricks, they stop working. Over-reliance on deception can also backfire if you gain a reputation for dishonesty then people stop believing anything you say. In contrast, coalitions are more reliable. By combining forces, you can become stronger than an opponent who might have seemed unbeatable alone

In light of your perspective, how would you describe Europe's strategic position, especially with respect to the war in Ukraine?

First, Europe is not a single actor. It's a collection of states, with the EU as the main coalition framework. That brings

strengths and weaknesses. The strength is obvious: combined economic and political weight is formidable, especially in trade and regulation. But decision-making is slow, since there's no single clear leader.

In the context of the Ukraine war, Europe's position has turned out better than many feared. Despite the energy crisis, inflation, and internal disagreements, European countries – with some exceptions – have largely stood by Ukraine. That unity is something Vladimir Putin probably did not expect. Still, there are shortcomings. Europe was slow to mobilize its defense industry and increase production, and collective decision-making remains cumbersome. But strategically, Europe is clearer now about its role than before the war. The wildcard, of course, is the United States – especially with Donald Trump as such a disruptive force. Europe remains dependent on U.S. security guarantees, but has had to accept that it must take more responsibility for its own defence and security. During 2025 they tried a delicate balancing act: European leaders sought to preserve their positions while avoiding a dramatic rupture with Washington. In 2026 that has become almost impossible – starting with Greenland and moving on to Iran. I can't see this changing much while Trump is in the White House.

You mentioned Europe's dependency on the United States. More broadly, how do dependencies and interdependencies shape strategy and a country's strategic position?

Too often we look at a single actor in isolation, or in simple relation to its main rival. But in practice, no country operates alone. Each is embedded in a web of relationships.

Take Russia, for instance. It has to manage its ties with China, North Korea, and Iran, while also deciding what kind of relationship it wants with Europe or even directly with the United States. Every choice in one direction has implications elsewhere. Economic interdependence makes this even more complicated. Global supply chains mean that a decision in trade or technology doesn't just affect one sector; it ripples across many others. For leaders, the difficulty is that any move to solve one problem often worsens another. The Middle East is a classic example – policies intended to stabilize one conflict tend to aggravate others. That's the constant challenge of strategy in an interconnected world.

These days there's a lot of talk about "geoeconomics." Do you see this as a merger between business and strategy?

"Geoeconomics" highlights the fact that economics and security can't really be separated. Tariffs, supply chains, access to raw materials – all of these are strategic concerns. In theory, free markets should take care of such issues. If you need something, you'll find a seller at the right price. But in practice, it's more complicated. Critical resources are finite, and states guard them carefully. They don't want to become vulnerable by letting them go too freely. So governments inevitably intervene to secure what they see as vital national interests. This creates a push-and-pull between states and businesses. Tech companies, for instance, are now forced to adjust to foreign policy considerations, whether they want to or not. We've seen this especially under the Trump administration, where economic measures – like tariffs – are applied for political reasons, and they in turn

reshape strategic alignments. One striking case is India. Frustrated by U.S. tariffs, India attended a summit hosted by China, alongside Russia and North Korea – despite its ongoing border disputes with Beijing. That was a signal to Washington: India has other options and won't be bullied. It shows how quickly economic moves can spill into the strategic realm.

“We already see states willing to pay a premium for security of supply and greater self-reliance. This isn't just about America.”

Sir Lawrence Freedman

Some analysts speak of the “weaponization of interdependence.” Do you agree with that framing?

To some extent, it's unavoidable. If you supply a country with something vital and they behave in ways you find unacceptable, it's natural to consider withholding that resource as leverage. That's basic statecraft. But the problem is overuse. The United States, in particular, has developed a tendency to reach for sanctions too quickly. In cases like Russia's invasion of Ukraine, sanctions are necessary and

justified. But when sanctions or tariffs become the routine response to any disagreement, they lose their effect and create new risks.

Other countries may decide it's simply too dangerous to depend on you. They'll look for ways to insulate themselves, even if it costs more. We already see states willing to pay a premium for security of supply and greater self-reliance. This isn't just about America. China has also used economic tools for political purposes, encouraging others to diversify away from dependence on Chinese markets. In the end, excessive weaponization of interdependence undermines the very networks that give states influence in the first place.

So in your view, geoeconomics isn't just about economics – it's about the fragility of the political order built on those interdependencies?

Exactly. Dependencies are both a source of strength and a vulnerability. They create leverage, but they also create exposure. Strategy in today's world is about managing those trade-offs – making sure that while you use interdependence to your advantage, you don't become trapped by it.

In Europe, “resilience” has become a buzzword in political and strategic discussions. Your conception of strategy – with its emphasis on adaptation and learning – seems close to resilience. How do you see the relationship?

Resilience is indeed essential, and not just in wartime. Think of COVID-19 and the supply chain disruptions that followed. If your system relies entirely on “just-in-time” logistics, even small disruptions can cause major crises. So governments have to plan for resilience in peacetime, not only in conflict. Adaptability is at the heart of resilience.

If a vital resource is cut off, you must be able to substitute, improvise, or innovate. That requires imagination as well as planning. And if you achieve real resilience, it can serve as a form of deterrence. An adversary who knows you can cope with whatever they throw at you may hesitate to act in the first place. Of course, resilience has limits. You cannot prepare for every contingency, so choices must be made. Strategic priorities determine which vulnerabilities you guard against and which you accept.

So resilience itself becomes a strategic question?

Exactly. Twenty years ago, it seemed safe to rely on international markets and interdependence. As long as you paid, you could expect access to goods and services. That assumption no longer holds. Trust in global markets has eroded. That means resilience now requires hard strategic choices: which countries can be trusted partners? Which agreements are reliable? And which areas demand self-reliance? It also requires public engagement. Societies must understand why certain sacrifices – like stockpiling supplies or investing in local capacity – may be necessary. Governments can't just impose resilience measures; they must explain the risks and the reasons behind them. Without that, policies may falter in the face of public resistance.

To what extent is your concept of strategy also a concept of force – not only military force, but power more broadly?

If you are overwhelmingly stronger than your opponent, strategy is less demanding. It's like aiming at a bull's-eye from a foot away – you can hardly miss. You can use force or the threat of it to impose your will. But most coun- ➤

tries are not in that position. They cannot rely on brute force alone; they must persuade, cajole, and build commitments. Strategy is hardest when you face opponents as strong – or stronger – than you are.

A recurring problem is the belief that military force can provide quick, decisive solutions. In practice, it rarely does. Russia's invasion of Ukraine in 2022 is a stark example: what was intended as a short "special military operation" turned into a prolonged, grinding war. Israel and Gaza provide another case. Israel achieved military dominance long ago, but the conflict persists because Israel cannot bring itself to negotiate with Hamas, and without that negotiation, no real resolution is possible. The Iran War has now led it with very little to show for almost three years of military effort – Hamas and Hezbollah have held on to their positions despite their capabilities being degraded.

“Strategy requires that ability to see the world through the eyes of others. Without it, you’re negotiating with myths rather than realities.”

Sir Lawrence Freedman

Iran looked weak after the short war with Israel of June 2025, and it has chronic internal weaknesses still, but the 2026 war allowed the hardliners to grip the country and strengthen their position. Force delivers victories on the battlefield, but it often cannot deliver political settlements. That's why much of my recent work has focused on the limits of armed force. It looks decisive, but it often creates new problems rather than solving old ones.

In the Financial Times, you recently described the Iran war as a war of 'unintended consequences'. Was the central strategic mistake of the war that its architects focused on what they could destroy, rather than on what they would have to build afterwards?

Within the Pentagon doctrine focused on hitting as many key targets as possible as quickly and as hard as possible, on the assumption that this would lead the enemy to crumble. It reflected the 'short war fallacy' – the belief that you won't have to face awkward consequences because you can win quickly before the enemy can respond effectively. Unfortunately if this does not work you are stuck with a more protracted war, and that will have a variety of economic and political repercussions. The big issue in this case – the closure of the Strait of Hormuz – should not have been a surprise. Everybody who had studied Iran scenarios knew that this was a likely Iranian response, and this is still hurting the international economy. So this was basic negligence by the Trump administration and overconfidence in the impact of the US military's first blows. They hit lots of targets but without asking how their destruction would help them achieve their political objectives.

How would you describe the strategic constellation between Trump and Putin?

Does Trump even have a strategy?

It's peculiar, and often hard to follow. Trump seemed to regard Putin as a kind of friend, and he entertained the idea that Putin might agree to a ceasefire in Ukraine or make concessions. Putin, of course, was happy to play along with the image of friendship, but he had no intention of conceding anything. This led to bizarre episodes where Trump blamed Ukraine for problems created by Russia, only to later realize that Putin wasn't delivering what he had expected. The deeper problem is that Trump lacks empathy – he doesn't really try to understand his counterparts. Strategy requires that ability to see the world through the eyes of others. Without it, you're negotiating with myths rather than realities. Putin may understand Trump better than Trump understands Putin. But Trump's leadership style – personalized, narcissistic, resistant to curiosity – makes him a uniquely difficult partner. Other Western leaders have struggled to manage this: they try flattery, ignore what they must, and work with whatever they can. So far, they've managed better than one might expect, but it is exhausting work. For Putin, Xi, and others, Trump represents a split in the Western alliance that they can exploit. That, in itself, is a strategic gift to them.

Many people interpret Putin's strategy in light of his KGB background, assuming intelligence training shaped his worldview. Do you agree, or do you see other factors at play?

His security-service background certainly influenced him – both in his choice of colleagues and in his readiness to believe in covert operations >

and manipulation. But I think it's incomplete to see him only through that lens. What has become clearer in recent years is his deep attachment to an old-fashioned, almost romantic Russian nationalism. He sees Russian civilization as exalted, with the Orthodox Church as a central pillar. This civilizational narrative has always been there, but perhaps it wasn't fully appreciated until recently – partly because Putin himself now speaks about it more openly.

“Empathy is about grasping how your opponents see the world – what matters to them, what pressures they feel, what might push them to act in certain ways.”

Sir Lawrence Freedman

Earlier you stressed the importance of empathy in strategy. Would you say empathy is even more crucial than intelligence or cunning?

I see empathy as a form of intelligence. By empathy I don't mean sympathy. It's not about agreeing with your opponent. It's about grasping how they see the world – what matters to them, what pressures they feel, what might push

them to act in certain ways. If you can do that, you're less likely to be surprised. You'll anticipate their actions better and understand which buttons to press. Intelligence in the narrow sense – data, plans, capabilities – remains essential. But empathy reinforces it. Without empathy, raw intelligence often fails to translate into effective strategy.

In Germany and Europe more broadly, there's frequent talk of “strategic autonomy.” It appears in coalition agreements and policy debates. Do you consider it a meaningful term?

The phrase gained traction with President Macron, who argued Europe should not be so dependent on the United States. The idea was for Europe to develop the capacity to act independently. The problem is that we are still very far from achieving true autonomy. So the question becomes one of degree.

At the milder end, strategic autonomy might mean simply taking independent positions when European interests diverge from Washington's. For example, on the Middle East, Europe's stance is already quite different from the American one. At the stronger end, full autonomy would mean acting without regard for U.S. opinion or capabilities. That carries risks and it would be very difficult and probably counterproductive to disentangle Europe and the US completely. But in practice, the foreign policies of European states are not fully aligned with the United States.

Following your conception of strategy, shouldn't Europe – given its relative weakness – be actively seeking new coalitions outside Europe?

Yes, and in fact that's happening. European states have been building closer ties with Indo-Pacific partners. The U.K.

now has strong partnerships with South Korea and Japan and is cooperating with Australia on next-generation nuclear submarines. Coalitions like these extend Europe's reach and resilience. But seizing such opportunities requires agility and foresight, qualities Europe has not always displayed. Still, practice is forcing a more serious approach to coalition-building beyond traditional transatlantic ties.

And how does technology fit into this picture? Increasingly, technology itself feels geopolitical.

Technology has always mattered, but digital innovation has accelerated the pace of change. Artificial intelligence is the current headline example. Already it's producing real transformations, though it's far from replacing human decision-making. The old “rubbish in, rubbish out” problem still applies.

Ukraine illustrates how technology now evolves rapidly in wartime. Because of its strong tech sector, Ukraine has been able to innovate quickly – especially in software and drones. Unlike aircraft or tanks, which take years to develop, new drones or digital tools can be fielded in weeks or even days. That constant cycle of innovation and counter-innovation has become a defining feature of the conflict.

But technological progress doesn't replace older methods – it layers on top of them. In Ukraine, we see infantry reminiscent of ancient warfare, trench battles that evoke World War I, artillery and maneuver reminiscent of the 19th and 20th centuries, combined with rockets, drones, and AI-driven systems. Each technological layer interacts with the others rather than sweeping them away. So yes, technology is geopolitical – but in a complex, layered way. >

Strategy has to account for both the old and the new, often all at once.

Looking back at your lifelong engagement with strategy, what has surprised you the most?

I get surprised all the time. That's part of the challenge of studying strategy. Since the 1970s, I've been analyzing contemporary conflicts, and the hardest thing to predict is when people do something stupid. You'd like to assume leaders are rational, weighing costs and benefits in ways you can calculate. But when their calculations are wrong – when they convince themselves of something foolish – that's when surprises happen. The Falklands War in 1982 was one example. Russia's full-scale invasion of Ukraine is another.

“Understanding why people misjudge is not the same as knowing exactly when they'll do so.”

Sir Lawrence Freedman

In both cases, many observers thought, “This would be a silly thing to do.” And yet, leaders went ahead because they persuaded themselves it was sensible. So the surprise doesn't come from the impossibility of imagining such actions – it comes from the difficulty of believing anyone would actually choose them. The task, then, is not to predict precise-

ly but to map out the range of possibilities, however unlikely they may seem.

That way, if the “stupid” option is chosen, you're at least prepared.

So would you say most surprises come from the human factor rather than from the sheer complexity of warfare?

Yes, largely from the human factor. Complexity certainly matters – COVID revealed just how fragile supply chains were – but complexity can often be studied and managed. The real challenge is fallible people in dysfunctional organizations working with imperfect information. If you keep that in mind, you shouldn't be shocked when governments make mistakes. In fact, it's rarer to find governments that consistently make effective decisions than ones that regularly mess things up. The norm is dysfunction.

So the strategist's weakness may be that he is too intelligent to imagine how stupid others can be?

(laughs) Something like that. The mistake is assuming rationality in a strict, formal sense. Human decision-making always carries some degree of irrationality, and that's what throws us off.

But today we know much more about cognitive biases and psychological errors.

Doesn't that help us anticipate mistakes?

It helps us explain mistakes after they happen, but it doesn't necessarily make us better at predicting them. Understanding why people misjudge is not the same as knowing exactly when they'll do so. Still, following a leader closely can give you a sense of their patterns. With Putin, for example, after observing him throughout the Ukraine war, I feel I understand better what motivates him – his obsession with not losing, which for him is as important as winning. That knowledge doesn't eliminate uncertain-

ty, but it gives a more rounded view of how he's likely to act.

So, even if governments behave irrationally at times, you wouldn't call it hopeless for strategy?

Not at all. Strategy remains possible and necessary. Even when leaders act unwisely, they're rarely completely irrational. They can often be pulled back toward more pragmatic choices. The point is to recognize limits: you're dealing with flawed people, incomplete information, and institutions that often don't function smoothly. Once you accept that, surprises are less devastating, and you can build strategies that are resilient enough to cope with misjudgments – your own and your opponents'.

How would you describe the relationship between Western and Chinese thinking about strategy?

Sun Tzu's *The Art of War* has had enormous influence worldwide. It's a very accessible text, written as aphorisms, which means readers can always find a quote that fits their situation. Some of the most famous “Sun Tzu” sayings are actually modern inventions – they just sound like things he might have written. The emphasis on outsmarting one's opponent explains the book's enduring appeal. There's also a tendency in the West to assume that China has some unique long-term strategic wisdom that we lack. The famous story about Zhou Enlai telling Henry Kissinger it was “too early to tell” when asked about the French Revolution reinforced that idea. But in fact, he was referring to the events of 1968, not 1789. I think we need to be careful not to exaggerate. Much Chinese strategy has been poor. China's current position owes as much to others' mistakes as to its own >

brilliance. There's no evidence that Chinese leaders have a mystical insight into strategy that guarantees success every time.

Would you say that strategy is essentially, or maybe even exclusively, a human phenomenon?

Not entirely. Primates, especially chimpanzees, display rudimentary strategic behavior. They form coalitions, exploit weaknesses in rivals, and even offer inducements to allies. In a very elemental sense, that is strategy. But humans take it further. We are not driven only by instinct. We deliberate, weigh alternatives, and consciously work out next steps. Once you step beyond instinctive reactions, you need strategy. So while strategy isn't uniquely human, its complexity and breadth in our societies certainly are.

One last, pressing question: do you see any light on the horizon in Ukraine?

I wish I could say yes, but honestly, it's a long haul. Russia has already put enormous effort into trying to defeat Ukraine – last year and again this year – and has failed. I don't see victory close for Russia. At some point, Moscow will have to confront the fact that it cannot achieve its objectives. Ukraine, of course, has no choice but to continue resisting. Russia does have a choice. That asymmetry matters. I wouldn't call myself an optimist in the sense of expecting a swift resolution or a decisive Ukrainian triumph. But I do think we may soon reach a point where Russia has to reckon with its inability to deliver on its own declared goals.

This year we have seen a real strengthening of Ukraine's position due to its ability to bring a variety of types of drones – interceptor, medium-range and long-range – into service at scale.

At the moment the Russians are struggling to cope.

If they are rational...

If they were rational, there would have been a ceasefire some time ago. But as we've discussed, strategy is shaped by human fallibility as much as by rational calculation. ■

Multi-Level Chess

The global order is undergoing profound transformation. Emerging technologies, non-state actors, and global interdependencies are creating a new level of complexity in decision-making.

Humans try to pass on wisdom to new generations in the form of general conclusions, principles, advice on conduct, often referred to as “theories”. The problem with these theories is that they stem from particular contexts and experiences upon which observers constructed generalisations. The old generalisations, the old theories, may still be useful in a particular context, given particular conditions, but in different circumstances, with different conditions, they may well not apply.

Thus it is with the principles of strategy which thinkers and practitioners since at least the 17th century have put forward, claiming that they are a sure-fire way to win wars.² For “truths” or “theories” about strategy, and “principles” are context-dependent. And we are living through a period in which the context of strategy is changing faster than at any time since 1989-1991, and in some ways more profoundly, as this is happening in several dimensions, some of which had previously been constant, or were at least imperceptibly slow to change over the past 100 years. ➤

¹ The author would like to thank Sven Biscop, Isabelle Duyvesteyn and EBH for comments on an earlier version of this paper. Opinions and errors remain hers alone.

² Beatrice Heuser: *The Evolution of Strategy* (Cambridge: Cambridge University Press, 2010), pp. 100-110.

TEXT_ Beatrice Heuser¹

Prof. Dr. Beatrice Heuser is Distinguished Professor at the Brussels School of Governance (VUB) and Head of Strategy Teaching at the German Armed Forces Command and Staff College (Führungsakademie der Bundeswehr). Her research focuses on why humans wage wars, which means and strategies they choose, and how they justify them.

KEY MESSAGES

- ➔ **Climate change, resource scarcity,** dependencies, migration, and geopolitical shifts will shape future conflicts.
- ➔ **Strategy** is becoming increasingly multidimensional, with military, economic and technological instruments.
- ➔ **Alongside states,** companies, criminal networks, and tech platforms are gaining strategic importance.
- ➔ **The rules-based international order** is under pressure from revisionist powers, new alliances and competing economic systems.
- ➔ **Success will depend on prioritisation,** intelligent integration of different instruments and the ability to address long-term challenges collectively.

DRIVERS OF CHANGE AND WAR: CLIMATE, RESOURCES, TECHNOLOGY, AND THE LIMITS OF GROWTH

The most important change, gradual but profound, is the climate's. It is reshaping our physical world through rising temperatures; more frequent and intense heatwaves, storms and extreme precipitation; sea-level rise and coastal erosion; melting glaciers, ice sheets and permafrost; ocean warming and acidification; shifting ecosystems and biodiversity loss; desertification and land degradation; and increasing risks of floods, droughts and wildfires. This will drive mass migration away from affected areas. Some previously barely inhabited regions may become fruitful farmland as permafrost melts, perhaps attracting some migrants, but the push factor will greatly exceed the pull factor.

Human mass migration has occurred before, but never on the scale to be expected when many of the world's over 8 billion inhabitants struggle to survive on finite resources. The great migrations from the East into Europe dating from c. 300-600 AD may not have exceeded a million souls, leading to catastrophic wars and the most dramatic reduction of standards of living Europe has known. Today, charities and NGOs provide humanitarian support, and state organisations seek to regulate migration and mitigate its effects. Nevertheless, if joint, world-wide efforts to mitigate climate change do not drastically increase, the scale of displacement expected in the coming decades will be of catastrophic proportions. Already today, migration is creating public anxiety in receiving societies, increasing political support for more restrictive migration and border policies.

In our globalised economy, fragility of the supply and distribution network has become more visible since disruptions caused in 2020 by Covid. We see this affecting and affected by international armed conflict. Since 2022, the Russian all-out invasion of Ukraine has been accompanied by Russian President Putin leveraging grain, oil, and gas exports to support his overall strategy. In 2026, mutual blockades by Iran and the USA in the Strait of Hormuz stopped movements of petrol, gas and fertilisers from the Gulf region to other parts of the world. Shortages of gas and fuel are keenly felt in China, force shops and restaurants in the Himalaya to close, Sri Lanka to impose a four-day work week and Egypt curfews, European airlines to cancel flights, while shortages of fertilisers endanger crops on the Indian subconti-

nent and in Sub-Saharan Africa. These are essential risks to survival.

Supply chains also affect our technological infrastructure which has made our societies more complex and sophisticated than ever. People run businesses from personalised minicomputers: smartphones, facilitating life in innumerable ways. Yet these very devices create historically unprecedented vulnerabilities: first, with their components supplied by companies in different countries, integrating rare earths chips produced in areas threatened by war, and rare minerals controlled by a handful of states; secondly, with hackers from hostile states or criminal organisations having ideal targets for manipulative attacks.³ Technology is our force multiplier, yet dependence on it is our Achilles heel.⁴

“The most profound change, gradual but profound, is the climate’s.”

Beatrice Heuser

Wars have been fought over access to resources since time immemorial. And resources are limited. In 1972, the Club of Rome reported on “The Limits of Growth”. Positing a continuity in “trends in world population, industrialization, pollution, food production, and resource depletion” it predicted catastrophic developments over the next 100 years effecting “a rather sudden and uncontrollable decline in both population and industrial capacity”, i.e. catastrophic change.⁵ While much has been done – albeit mainly only since the turn of the century – to stem and then mitigate climate change, and birth rates have gone down by in China, Japan, and Europe, the trends for the worst extremes have at best been depressed slightly. There is no technological magic on the horizon that can again save the world from the effects of overpopulation, as the invention of fertilisers and industrial farming did in the 19th century. Our escape from the Malthusian curse >

³ Matthew Ford: *War in the Smartphone Age: Conflict, Connectivity and the Crises at Our Fingertips* (London: Hurst, 2025).

⁴ Kristan Stoddart: *Cyberwarfare: Threats to Critical Infrastructure* (Basingstoke: Palgrave Macmillan, 2022).

⁵ Club of Rome: *The Limits of Growth* (1972), [The Limits to Growth – Club of Rome](#).

was but temporary. Resource distribution, if not well managed, will increasingly be a driver for war.

Meanwhile, ideological drivers of war still exist. Authoritarian nationalism is back, as are religious fundamentalists, as deep social transformations are taking place, including the marginalisation of unskilled workforces living in the wrong place vs. a lack of skilled employees, growing inequalities in income, and a radicalisation of politics in many countries as unfiltered, uncontextualized news or lies reach people through social media. This, plus artificial intelligence, is transforming the very way people think, processing information uncritically, more manipulable than ever since literacy became wide-spread, with attention only to the here and now.⁶ This explains also why new generations are ignorant of the lessons their elders drew from past catastrophes, as from the causes of the world wars, the importance of human rights and international rules.

The implications for strategy are that wars will still occur for classical reasons such as over resources and ideas. But means are changing, and in liberal democracies, given the limits of growth, there is no increase in wealth to offset the cost of defence. Also, there are more and also new actors.

MORE ACTORS, DIFFERENT ACTORS

When the term “strategy” was introduced into West European languages in the late 18th century, actors in war were almost exclusively states. Therefore, most writing about strategy focused primarily on states. Corporations have also been major actors several times in history, from the Dutch and later British East India Companies to the US-based GAMAM giants now.⁷ Yet the role of an Elon Musk as a major player in the Russo-Ukrainian War with his supply of vital space intelligence to Ukraine is unprecedented technologically and in terms of military impact.

Then, in the shadows, there are international criminal organisations such as drug cartels. The security – internal and external – of certain South American states, is more threatened by the latter rather than by inter-state conflict which may however come in their wake. International militant religious movements, only partly backed by states, have existed before, driving the early Islamic conquests, the crusades and the confessional wars, but

strategy literature paid little heed to them given that they all but disappeared after the Battle of Culloden 1746. Since the 1990s, however, militant religious fervour has undergone a revival.

While it is still mainly states and a handful of superrich that have the resources to generate cyber power on a large scale or mass produce drones, some technologies have become attainable for a large number of players. IT-savvy criminals can hack accounts and conduct fraudulent business around the planet without themselves moving about, and state and non-state actors can engage in cyberwar and other “hybrid” or “grey zone” activities evading attribution more easily than before.⁸ Non-state actors of more limited means also have this potential advantage as there is now a large supply of recruitable IT specialists. Moreover, the cheaper drones or the use of IEPs triggered by mobile phones or even simple remote controls for household use have increased their options of action.

“Authoritarian nationalism is back, as are religious fundamentalists.”

Beatrice Heuser

Some see in the cumulative effect of post-colonial migration the potential for intra-societal friction currently aggravated by the rise of populist nationalist movements throughout receiving societies. One may not go along with those film makers and academics who predict civil war in our societies.⁹ But undoubtedly, the options available to troublemakers within societies – be they agents of a hostile foreign power or criminals or social agitators with an indigenous cause – have increased.

And finally, turning to the supra-state level, there were no international organisations (IOs) back in the 18th century: leaving aside the Catholic Church, few IOs would see the light of day before the 20th century. The United Nations have now been with us for 80 years. In the 1990s, it functioned briefly as its creators >

⁶ Noam Yuval Harari: *Nexus: A Brief History of Information Networks from the Stone Age to AI* (Harmondsworth: Penguin, 2024).

⁷ Google, Amazon, Meta (formerly Facebook), Apple, and Microsoft.

⁸ Kristan Stoddart: *Russia's Hybrid Warfare Offensive Against the West* (Berlin: de Gruyter, 2025).

⁹ “Civil War” (film, Alex Garland dir., 2024); David Betz: „Civil War comes to the West.” *Military Strategy Magazine* Vol. 9 No.1 (2023).

intended with fruitful cooperation of the Permanent Five members of its Security Council. But this has again yielded to paralysis given the divergence of the aims of these five key actors, the US, Britain, France, Russia, and China. This paralysis led to the Brussels Treaty of 1948, the first step towards European integration, and a year later the North Atlantic Treaty.

But here too, we see change. While previously, IOs tended to expand their membership, since the Greek financial crisis of the early 2010s and then Brexit this trend is seen to be reversible, accentuated by the USA under the presidencies of Donald Trump suspending membership of or withdrawing from a series of UN-affiliated organisations. NATO and the EU suffer from overstretch. Divergences of priorities between member states always existed, but now they may foreshadow fragmentation. Given their numerous membership and commitment to democratic processes, they are exceedingly slow in their decision-making and tend towards effete compromises to satisfy all sides. Competition in the form of the Shanghai Cooperation Organization (SCO) and the BRICS still expand in membership.¹⁰ We see alternative cooperative configurations spring up such as the UK-led multinational Joint Expeditionary Force created in 2014, and “minilaterals” or “coalitions of the willing”, such as AUKUS and the US-Japanese-(South)Korean Trilateral Pact.

The implications for “strategy” are many. When adversaries are state actors, classical military strategy still applies in part, but what if – as we shall discuss below – they use mostly non-military tools? What if adversaries are or are supported by non-State actors, or have no physical, territorial base that could be held at risk? How to retaliate for a cyberattack? How to deal with the prospect of the replacement of an entire monetary system by an alternative one, based on gold, the renminbi or even cryptocurrency? What if wars about physical resources occur along with conflicts over flows or money and trade?

COLLIDING AIMS, WORLD ORDERS AND DISORDERS

Which brings us to the aims of the actors-parties to current conflicts. On the one hand, the Europeans continue to pursue their status quo aim of maintaining the international rules-based order that is founded on the UN Charter and subsequent treaty-based international law, as these in their view create ensure stability,

the precondition for prosperity. It is also a factor of continuity that the USA, Russia, and China want to be great powers, with the difference that China is on a trajectory of steep rise in all aspects of power, but mainly economically, while the US is in decline relative to China, and Russia is trying to reverse its decline of the 1990s. Russia is doing so by intimidation and outright military aggression, and by an astute strategy of using its main export products – the prime materials oil, gas, and grain – to coerce support among its trade partners. Russia and – more discretely – China want to turn the world order into one of great power hegemonies, each with their own zone of influence, yet actually all wanting to be “top nation” (a hankering famously identified as the cause of the First World War¹¹). Both Putin and the current American administration want to return to the 19th century, the latter casting old allies by the wayside, abandoning the internationalist and humanitarian ideals of a Woodrow Wilson, Franklin D. Roosevelt or Harry Truman on which the UN was built.

“What if wars about physical resources occur along with conflicts over flows or money and trade?”

Beatrice Heuser

Among the world’s most populous states, India and Brazil harbour ambitions to become great powers or even regional hegemonies. Less populous leading industrial nations (Japan, Germany, the United Kingdom, France, Canada) have secured their place alongside the US and China in the G7, but are status quo powers with strong investments in the current world order. Some regimes, such as Turkey; Israel, or North Korea, see a shifting global power relationships as an opportunity to increase their own power locally. Others are open to the argument that many of the rules by which IOs play are not working entirely in their interests and should be revised. They are receptive to Xi Jinping’s >

¹⁰ Brazil, Russia, India, China, and South Africa plus 6 other States with growing economies.

¹¹ W. C. Sellar and R. J. Yeatman: *1066 and all that* (London: Methuen, 1930).

and Putin's calls for respect for "diversity of civilisation" (which questions the universality of human rights and the 1966 covenants).¹² In addition to states, international Islamic movements of varying shades of bellicosity aim for greater political and cultural power, the latter at odds with some of the principles of the Human Rights Charter and the 1966 international covenants that subordinate religious laws to secular rights.¹³ Finally, some actors are just outright greedy, from the big corporations and international organised crime top kleptocratic political leaders with their Versailles-size palaces.

What are the implications? Adversaries and allies line up not only on whether they are status quo powers or revisionists. States wanting to mitigate the effects of climate change should coalesce against those who deny the severity of these effects and refuse to act to mitigate them, yet may need them as allies against aggressive third parties. Strategies are now pursued on several levels simultaneously, with conflicting aims. The means of liberal states are limited, and choices must be made: squaring the triangle of climate, defence, and welfare without increasing taxes very substantially seems impossible. States world-wide struggle with great debts, yet populations want a better life, and in democracies this cannot be ignored. Meanwhile, demagogues make promises they cannot keep while pointing at scapegoats: the elites, immigrants, liberalism, globalisation, change.

STRATEGIC TOOLS

We have already mentioned several of the strategic toolsets actors are using in pursuit of their aims. Economic, financial and technological tools, not military tools, must be employed to address the effects of climate change, especially anticipated mass migration. This enormous task can only be tackled jointly at state and supra-state level.

Also in pursuit of other aims, most regimes' strategic toolset of choice is economic. This barely existed when the Communist parts of the world, especially the Council of Mutual Economic Assistance (Comecon) countries and China, did not trade globally. Today, there are several different tools in this tool set. The export of primary commodities used to wield power over trading partners has been mentioned; China leverages its rare earths and

exports of manufactured goods; Taiwan plays on its near-world-monopoly on the production of microchips; the US as a large import market now deploys tariffs as a means of coercion; the United Kingdom relies on its financial service sector, and so on. Germany's faith in political change in China and Russia through trade has proved naïf, while China is very successful with its global Road and Belt transport system project, its heavy investment in ports from Ecuador – opening up the entire Latin American market – to those in Nigeria, Djibouti, Kenya, and Tanzania in Africa, and ports from Piraeus to Hamburg in Europe.

The Russian and Chinese governments have an enormous advantage over liberal market economies when it comes to their domination of their industries, particularly arms industries. Both can order their industries to increase a hundred-fold the production of or start building new weapons and weapons systems, while this is matter of extensive negotiation between governments in democracies and powerful military industries that can impose financially crippling conditions on their customers. Also, the strategic use of tariffs by the US and of sanctions by the Europeans comes at a price: damage to one's own producers or consumers.

We see Russia and China trying to increase their power by building an alternative global financial system to replace that which since the Second World War has been based on the US dollar. This heralds nothing less than a new financial-economic division of the world. Financial investment, underbidding competitors and tying no socio-political conditions to such investments, gives China political and strategic leverage, even if it carries risks and limits China's short-term gains.

Having only economic and financial tools and little military might to back them is insufficient, as the Europeans have realised since 2022. The military is the most classical tool of strategy, in the case of NATO, to deter aggression or to defend collectively if deterrence does not work. Russia has used its military against Ukraine in the hope of bringing it back into the Russian Reich and may be tempted to do so elsewhere if not thwarted. The military lends itself to power projection, if well equipped and of a critical size, usually meaning substantial navies, airlift capabil- >

¹² Statement by Xi Jinping, President of the People's Republic of China, At the "Shanghai Cooperation Organization Plus" Meeting, Tianjin, 1 Sept. 2025.

Full text of Xi Jinping's speech at the 'Shanghai Cooperation Organization Plus' Meeting.

¹³ The two International Covenants on Civil and Political Rights and on Economic, Social and Cultural Rights.

ity and above all deployable professional forces.¹⁴ Individually, the Europeans have little to offer, and after unsuccessful campaigns of the last decades, European powers are less likely than ever to embark on interventions far from home.

Second-tier powers such as the Europeans need a strategic force multiplier: alliances. NATO in a mainly military role, and the EU hitherto in a mainly economic role, are thus both the strongest strategic tools in the box for any member state that can persuade its partners to take a joint position. For this reason, Putin hates both NATO and the EU and tries to use the BRICS and to a lesser extent, the Chinese-dominated SCO as counterweights. Trump shares this hatred of the EU and is sceptical about the utility of NATO to the USA, as he does not see Russia as a strategic threat to his country and moreover, the USA has never dominated this alliance to the extent the USSR could dominate the Warsaw Pact.

Working in and through IOs turns on communication. When most IOs were set up soon after the Second World War, Britain and France had great influence on their structures and proceedings. Both countries still play on their former cultural-political influence, but their colonial record is often critically remembered in their ex colonies. Britain has chosen to divest itself of the disproportionate power it wielded in the EU and its functioning as a transatlantic bridge, and the AUKUS treaty with Australia and the US is no substitute. Britain, Canada, Australia and New Zealand have privileged access to superior US technical means of gathering intelligence through “five eyes” sharing. This dependency comes at a cost. In the Cold War, when commitment to the defence of Europe was America’s paramount concern, Britain could count on this “special relationship”. Since the end of the Cold War, however, fear of US abandonment has grown while the United Kingdom’s dependence on the USA has not diminished. Britain, Canada, Australia and New Zealand profit from (waning?) dominance of English as a language in international affairs, originally due to Britain’s influence at the beginning of the 20th century. Now they piggyback on America’s “soft power”. That in turn is increasingly rivalled by China and Russia.

Since the Second World War, the traditional European strategic tool of diplomacy, especially the role of embassies, has been downgraded. Ministries often communicate bilaterally with

“The non-military dimensions of strategy are now at least as important as the military ones.”

Beatrice Heuser

those of other states, or multilaterally through seconded experts (both civilian and military) within key IOs. Resultant statements, communiques and joint positions carry weight only if backed by action: the co-ordinated use of the other big tool sets – economic and financial, or military.

Finally, there is the tool of active interference in communication in other countries that is subsumed under “cyberwar”, the greatest innovation in recent times. While propaganda is an old thing, the technology and resultant ways in which it can now reach deep into other societies through social media and manipulated news is “next level”. The hostile exploitation of the cybersphere for intelligence and intervention has vastly grown in importance. This tool, however, is used more intrusively by Russia and China than by the liberal democracies that still uphold old rules-based codices of behaviour.¹⁵ Political aims have always been pursued by non-violent means, sometimes alongside violent ones, only the latter conventionally defined legally as war or armed conflict. Sieges, naval blockades and sanctions have always straddled the distinction between lethal and non-lethal means. New problems of attribution further undermine International Humanitarian Law and its enforcement.

CONCLUSIONS

Does all this mean we should throw out all literature on strategy that was based on assumptions of a bygone world? Not necessarily, but we must examine critically theories derived from past experiences, questioning their current and future applicability. Where in the past, strategy could be seen almost exclusively in military terms, its non-military dimensions are now at least as important. Where it could be perceived as a game of chess with >

¹⁴ After the experiences of the French Indochina War, the American Vietnam War and the Soviet Afghanistan War, it is now seen as problematic to use conscript forces other than for self-defence.

¹⁵ E.g. the Vienna Convention on Diplomatic Relations.

pawn-soldiers and knights, it now appears as a game played on several boards, at several levels simultaneously. A pawn on one might be exchanged for the queen on another, a rook lost here may mean a battle lost there, and all that while the rules are being rewritten. Think of Putin, a deft player, advancing his bishops, his Russian Orthodox nationalism, his reactionary values and his bot farms in a propaganda campaign on one level to create ideational chaos and realignments, his tanks and missiles as knights and pawns on a second to sweep the enemy off the board, and his rook-silos of grain, petrol and gas on a third to coerce trading partners to give Russia political support.

States and rulers never pursued their political aims with military means only, but now more than ever, crafting a coherent strategy to do so is a multidimensional challenge.¹⁶ It requires vision and more co-ordination of tools than in the 19th and 20th centuries as the world has become so much more complex. Democracies, including the members of NATO or the EU, with their ethos of trying to please all component parts, face an infinitely greater challenge in strategy-making than autocracies. But jointly, they have the tools. What they need is the wisdom to apply them coherently with astute prioritisation.¹⁷ It is in their greater and common interest that their leaders should tackle the long-term strategic challenges they face.¹⁸ ■

¹⁶ On the dimensions of strategy, see Colin Gray: "RMAs and the Dimensions of Strategy", *Joint Forces Quarterly* (1997-1998), pp. 50-54; Isabelle Duyvesteyn and Beatrice Heuser: "Introduction", in Duyvesteyn and Heuser (eds): *The Cambridge History of Strategy* (Cambridge University Press, 2025) and Beatrice Heuser: 'Strategie: Theorie für die Praxis', *The Defence Horizon Journal Deutsch* <https://tdhj.org/de/post/strategie-theorie-praxis/>

¹⁷ Peter Ricketts: *Hard Choices: The Making and Unmaking of Global Britain* (New York: Atlantic Books, 2022).

¹⁸ Sven Biscop: *Grand Strategy in Ten Words* (Bristol: Bristol University Press, 2021) aptly sets out how the EU should do this.

“Resonance Cannot Be Artificially Created”

Germany's greatest strategic challenge may lie less in external threats than in internal cohesion. Without shared narratives and societal legitimacy, even the most compelling strategy remains politically fragile, argues political scientist Eric Sangar.

Eric Sangar, what do you understand by “grand strategy”?

Eric Sangar: Since the nineteenth century, the classical concept of strategy has primarily referred to the question of how political objectives can be achieved through military means. After the First World War, however, it became clear that military means alone were insufficient to wage wars successfully. This gave rise to the concept of grand strategy: the idea of integrating military, political, economic, and other instruments into a coherent framework. Today, the term is used more broadly in International Relations and is no longer confined to the question of how to win future conflicts. What interests me is the question of which long-term objec-

tives states pursue, how political elites reach agreement on them, and which means they consider appropriate for achieving them.

So your focus is more on analysis than on policy recommendations?

Yes. For me, the central question is: Why do states pursue certain goals, and why do they regard particular means as legitimate or effective? This allows us, for example, to examine why Germany relied heavily on military instruments until 1945 and why this changed fundamentally after 1945. The issue is not some supposedly objective rationality, but rather how strategic ideas and strategic convictions emerge.

What kind of understanding emerged in Germany after 1945?



INTERVIEW_ Eric Sangar

Dr. Eric Sangar is Assistant Professor of Political Science at Sciences Po Lille and a researcher at CERAPS (University of Lille). His research focuses on collective memory in foreign policy, emotions as justifications for political violence, and the forecasting of military threats. His most recent publication is *Germany's Grand Strategy* (2026).

KEY MESSAGES

- **Germany's grand strategy** underwent a fundamental transformation after 1945 – from power projection to defence, integration, and cooperation.
- **Strategic realignments** require societal resonance and not merely political decisions.
- **Memories** of National Socialism, reunification, and other periods of upheaval continue to shape strategic debates in Germany.
- **The Zeitenwende** primarily altered the weighting of policy instruments, not the fundamental objectives of German foreign policy.
- **A sustainable German grand strategy** requires orientation, dialogue, and a minimum societal consensus about the future.

After 1945, Germany fundamentally transformed its grand strategy. I would not describe this as pacifism. Germany still maintained an army and, at times, even the largest army in Europe. The crucial difference was that these armed forces served exclusively territorial and collective defence within the framework of NATO. During the nineteenth century and the first half of the twentieth century, military means had also been employed to pursue offensive national objectives. After 1945, a process of learning also took place within society itself. People asked what lessons should be drawn from the past and whether a fundamental reorientation was necessary. What proved decisive was the resonance between the narratives of political elites and society's broader memory discourses. Only this interaction made a new grand strategy possible.

Why did a similar transformation fail after the First World War?

After 1918, parts of the political elite assessed the situation quite realistically. Gustav Stresemann, for example, understood that revising the Treaty of Versailles through military means was unrealistic. Instead, he relied on diplomacy, negotiation, and international engagement. Yet this strategy did not receive the necessary support within society. Competing interpretations of the war and its outcome coexisted, often contradicting the foreign-policy orientation of the Weimar Republic. As

a result, the Weimar coalition's grand strategy of revision through reconciliation lost legitimacy and ultimately failed because of domestic societal resistance.

Would you say that the grand strategy of the Weimar Republic failed to "resonate" with society?

Yes – and more than that. The elites did not even attempt to develop a narrative capable of generating broad resonance. After 1945, the situation was different. Through the narrative of the "zero hour," Adenauer enabled large parts of the population to identify with the new political system and its foreign policy. After 1918, by contrast, struggles over interpretation were largely left to political camps and associations. No integrative narrative emerged. As a result, there was no societal foundation capable of providing lasting legitimacy to a new foreign-policy orientation.

You draw on the sociologist Hartmut Rosa's concept of resonance. Why is resonance important for your analysis?

Hartmut Rosa describes resonance as a relationship of response that cannot be measured directly. In this sense, I try to examine indirectly how societal initiatives react to political narratives: do they reinforce them, constrain them, or transform them? Looking at the nineteenth century, for example, we can see how social movements adopted and even radicalized certain national narratives promoted by political elites. For the period after 1945, we also have

survey data showing how collective interpretations of German history evolved. These data reveal that society's reassessment of National Socialism strongly supported the Federal Republic's self-understanding as a civilian power.

So society does not merely reinforce political strategies; it can also constrain them.

Absolutely. Societies possess considerable sanctioning power, especially in democracies. A good example is the debate during the Adenauer era about equipping the Federal Republic with its own nuclear forces. Once these plans became public, they encountered massive opposition. Adenauer had to distance himself from them, and the project disappeared from the political agenda. This demonstrates that societal resonance can both expand and restrict political room for manoeuvre.

What are the implications for political elites?

Elites depend on societal legitimacy. Because legitimacy cannot simply be manufactured, grand strategies often appear ambiguous, and tensions frequently arise between broad objectives and concrete decisions. Political leaders must constantly anticipate whether particular measures will encounter public support or resistance. This becomes especially difficult when political reorientations are incompatible with the dominant memory discourses of a society. >

„After 1945, Germany fundamentally transformed its Grand Strategy. I would not describe this as pacifism.”

Eric Sangar

You speak of a fragmentation of memory after 1990. What do you mean by that?

After the end of the Cold War, the consensus regarding the lessons to be drawn from National Socialism gradually eroded. The federal government attempted to justify military deployments by arguing that Germany's history imposed a responsibility to defend democracy and human rights internationally. Yet this narrative never became firmly established.

Is there a particularly illustrative example you could name?

The Iraq War in 2003. In Germany, there were significant reservations about participation. These objections were directed not only at the justification for the war but also at the broader idea of using military force to achieve political objectives. Gerhard Schröder made opposition to German participation the central issue of his election campaign and won the federal election. For many political elites, this was a clear signal that foreign-policy activism encounters societal limits whenever military instruments are involved.

If historical narratives and collective memories help people make sense of their experiences, that sounds less like rationality and more like interpretation. Exactly. Which interpretations gain broad acceptance depends not only on their rational quality but also on social processes, party-political strategies, and civil-society initiatives. These processes ultimately determine the conditions under which political projects can generate resonance.

If we understand you correctly, resonance means something like sympathetic vibration. A strategy must strike a chord with people. And memory plays a central role in that process.

Memories form a kind of resonance space. They decisively influence how political messages are received. It is important to understand that memory dynamics can never be fully controlled by political elites. They can be influenced, but they also emerge from broader social processes. This is true not only in Germany but also, for example, in the United States, where certain interpretations of national history have largely originated within civil society.

You were working on this project when the term *Zeitenwende* suddenly came to dominate political debate. How did you experience this turning point?

It is always difficult to analyse an event while it is still unfolding. Even among researchers there is no consensus yet on whether the *Zeitenwende* truly constitutes a radical transformation. What I found interesting was that Olaf Scholz did not formulate fundamentally new foreign-policy objectives. The goals remained essentially the same: the defence of universal values and principles. What changed was primarily the weighting of the instruments. Suddenly, there was a renewed emphasis on military capabilities – especially for the defence of NATO territory.

Yet this new narrative did not resonate everywhere. How do you explain this?

I believe this is connected to experiences of German reunification. Many people felt that their own experiences and biographies had not been sufficiently reflected in the narratives of unified Germany after 1990. As a result, some came to view political narratives from above as disconnected from their lived reality. When experiences fail to find resonance, it becomes difficult to anchor new political narratives in a credible way.

If that is true, then the greater challenge may not be external threats but internal cohesion. That would also mean that grand strategy cannot be understood merely as an instrumental tool. It is not about inventing a story after the fact to justify political decisions.

That is precisely the crucial point: resonance cannot be artificially created. It does not emerge from a clever communications strategy. It arises only when political narratives genuinely connect with societal experiences and interpretations. For me, everything begins with a simple question: What truly concerns people? What experiences have shaped them? What memories do they carry with them? It is there that political interpretations are either accepted or rejected.

That means we first need to understand which experiences are actually meaningful within society.

Yes. And those experiences are highly diverse today. We should therefore begin by examining why certain groups or regions reject political narratives. What memories lie behind this? What interpretations of their own history have people developed? Only on that basis can we consider what kinds of shared frameworks of meaning might be possible – frameworks that integrate without excluding others. I do not have a simple answer to that question.

Then Germany's horizon of memory would probably need to become broader than it has been so far.

I think so. National Socialism remains, of course, a defining historical experience. But it is not the only one. Reunification, the economic miracle, and other societal transformations have also left their mark. The question therefore becomes whether a framework of

interpretation exists in which different experiences can find their place while still allowing for a shared understanding of society.

If grand strategy is to be more than conflict management, is it ultimately about orientation – about where a society wants to go?

Yes, I would agree with that. Strategic objectives are always future-oriented. They concern the question of how we want to live, which principles we wish to uphold, and what kind of society we aspire to create. In this sense, grand strategy is always an attempt at collective orientation. At the same time, there is no objective lesson that can simply be extracted from history. History does not provide ready-made answers. Ideally, orientation emerges through a process of deliberation about the meaning we assign to past experiences and the conclusions we wish to draw from them.

That seems to be missing today.

Indeed. Political decisions are frequently communicated as though their underlying assumptions were already settled. Experts have identified a problem, a specific policy follows, and society is expected to fall into line. But democracy does not function that way. It depends on debate, disagreement, and compromise. If decisions are made at one level and perceived as imposed at another, no sustainable grand strategy can emerge.

Perhaps that is why we need a vision of the future in order to clarify who “we” are in the first place.

Yes, I would agree. At present, however, we lack the conditions for even such a minimal consensus. We are experiencing deep polarization. Many political actors possess very concrete visions of the future, but the shared framework within which these visions could be debated is becoming increasingly fragile. In my analysis, this is also linked to the fact that we agree less and less on how the past should be understood.

Suppose the Chancellor asked you how such a process could be initiated. What would you advise?

Perhaps, first of all, humility. Not presenting answers immediately, but listening. Before formulating a programme, one should understand what moves people. This might mean deliberately travelling to different regions, organising public forums, and listening even where criticism is loud and uncomfortable. Not as a performance, but as a genuine attempt to create resonance. For me, an interesting example is Emmanuel Macron during the Yellow Vest protests. He initiated numerous local assemblies in which citizens could articulate their concerns. The political outcomes were limited, but the effort itself mattered. It signalled that society's experiences were at least being acknowledged by politics. For a democracy seeking to regain a shared under-

standing of its future, that seems to me an essential first step.

You have just completed your habilitation. What career “strategy” would you recommend to young academics?

First and foremost, one must genuinely enjoy this work. Academia is not a career one pursues in order to become wealthy or to achieve security quickly. One must enjoy thinking, questioning assumptions, and critically examining certainties that circulate in public debate. One must also be willing, from time to time, to challenge prevailing opinions. There is also the question of whether intellectual work today must necessarily be tied to the university. Universities have a strong institutional logic of their own and are highly regulated environments. At the same time, it is entirely possible to engage in intellectual work and exert influence outside academia – in think tanks, foundations, associations, or civil-society organisations. That is why I would tell young people: do not confuse intellectual activity with an academic position. There are many places where ideas can be developed, debates shaped, and societal impact achieved.

Is this form of public intellectual work becoming more important today?

I believe so. Many of the defining conflicts of our time are being fought at the level of ideas. The struggle is taking place not only in parliaments or on the streets, but also over which interpre-

“One must also be willing, from time to time, to challenge prevailing opinions.”

Eric Sangar

tations of society, democracy, and history will prevail.

For that reason, intellectual work – both inside and outside universities – is becoming more important. At the same time, it is becoming more controversial. In some respects, it is becoming harsher. But that also means that the stakes are real. We no longer live in a situation where social scientists can comfortably remain in an ivory tower. Social conflicts are real, and that is precisely why the questions we study matter.

Does this change the role of the scholar?

For me, this is one of the most difficult questions. On the one hand, one does not want to be perceived as an activist. On the other hand, I consider it unrealistic to separate one's convictions entirely from one's academic work. I hold certain values. I have ideas about how democratic coexistence should function. And I want to contribute to that.

That is where the tension lies. One seeks to work analytically while also acknowledging that one is part of the society one studies. Finding that balance is not easy. Yet perhaps that is precisely what makes the work so interesting today. The challenge is to maintain scholarly distance without withdrawing from public debate. For the social sciences, I believe this has become unavoidable. ■

“We no longer live in a situation where social scientists can comfortably remain in an ivory tower.”

Eric Sangar

A portrait of Daniel Marwecki, a man with dark hair and blue eyes, wearing a white button-down shirt. He is looking directly at the camera with a slight smile. The background is a light, textured wall.

“Relative Decline Is Not Necessarily a Bad Thing”

The West is losing influence in relative terms, Asia is gaining importance, and Europe is searching for its role in a multipolar world. Political scientist Daniel Marwecki argues that Europe should acknowledge its historical loss of power – and develop a new European strategy from that reality.

Daniel Marwecki, you live and work in Hong Kong, have previously conducted research in Jerusalem and London, and have spent much of your life moving between different parts of the world. How has this international background shaped your view of the world and of what we commonly call “the West”?

Daniel Benjamin Marwecki: Even during my studies in Germany, I noticed that what we were being taught could not possibly be the whole story. The perspective was highly Eurocentric. Most of the literature came from Europe and the United States, and so did the research questions. Large parts of the world barely appeared as actors in their own right. This was the early 2000s, when the dominant assumption in many circles was that the future lay in transcending the nation-state and that Europe represented the model for this development.

How did your experiences afterward change that picture?

My first experiences outside the West were in Armenia, the Caucasus, and later the Middle East. There I became aware of how deeply these regions were connected to Europe and the West – through borders drawn by imperial powers, for example, or through expectations shaped by Western influence. My impression was that these societies cannot be understood without considering their histories and their integration into a Western-dominated world order dating back at least to the nineteenth century. I wanted not only to collect these experiences but also to incorporate them into my work. What interests me is a critical perspective that does not stop at criticism alone. That posture now strikes me as somewhat too comfortable.

What do you mean by “too comfortable”?

The classic position of criticizing the West while remaining firmly embedded within Western institutions has reached its limits. Today, we need to ask: What comes after the West?

In my view, much of the older critical literature does not provide a sufficient answer because it remains deeply shaped by Cold War patterns of thought. We are moving toward a world that will increasingly be defined by the Asian century, a world in which Europe possesses considerably less power to shape outcomes.

What do you mean by “the West” in the first place?

In Germany, the West is often confused with liberalism. Consider the debates in the cultural pages over recent years. On one side are postcolonial critics who argue that the West is colonial, exploitative, criminal, and genocidal. On the other side are defenders of the West who emphasize that it is democratic, governed by the rule of law, and responsible for prosperity, claiming that it merely slept while Russia and China grew stronger. Both sides capture part of the truth. Yes, the West was imperial. It was exploitative and colonial. But it was also liberal, democratic, and governed by the rule of law.

How would you define the West historically?

The West is the part of the world that appropriated the world between the fifteenth and nineteenth centuries. People in imperial China, pre-colonial India, and the Ottoman Empire traded with the West long before that. Yet it was by no means inevitable that the West would one day dominate the globe. The crucial moment was its expansion outward and its achieve- >

INTERVIEW_ *Daniel Marwecki*

Dr. Daniel Marwecki is a political scientist and teaches International Relations at the University of Hong Kong. In spring 2024, his book “Absolution? Israel und die Deutsche Staatsräson” (Absolution? Israel and Germany's Staatsräson) was published. It was followed in autumn 2025 by “Die Welt nach dem Westen” (The World After the West). He is a regular contributor to a variety of media outlets.

KEY MESSAGES

- **The West is losing** influence in relative terms because other regions are rising.
- **Europe's future** does not lie in great-power ambitions, but in strategic autonomy and deeper integration.
- **Defense** requires European cooperation rather than national rearmament.
- **The less powerful a state becomes**, the more dependent it is on rules, international law and institutions
- **Europe's task** is to acknowledge reality, preserving its strengths, and creating new room for action.

ment of global supremacy. In that sense, the West was initially the part of the world that had effectively conquered the world by around 1900.

And today?

The question of who belongs to the West has always been political. The best contemporary example is Ukraine. Until 2022, few would have considered Ukraine a central part of the West. It was only after Russia's invasion that the country came to be viewed as a frontline of the West.

Russia itself has historically understood itself at times as Western and at other times as Eastern, and today it is oriented strongly toward China. Japan, South Korea, and Taiwan, meanwhile, see themselves culturally as East Asian but politically belong to the West – ultimately as a consequence of the Cold War.

Where does Europe stand, and how does it position itself within the West?

For me, the crucial question is this: What should the West become at a moment of relative decline? In Marco Rubio's speech at this year's Munich Security Conference, one finds a clearly articulated imperial vision of the West and the necessity of its return. At the opposite end of the spectrum is the position currently visible in Spain under Pedro Sánchez, which embraces the concept of multipolarity and interprets it as an opportunity for Europe. These represent, to my mind, the two most distant positions imaginable. When I look at Germany today, I see a tendency to drift toward a rather crude geopolitical worldview.

What makes you believe Germany is in decline?

Since the financial crisis of 2008, we have witnessed Germany's relative –

not absolute – decline. Many Asian countries are growing much faster, not only China and India but also Vietnam, which for years achieved growth rates of seven to eight percent. If others grow faster than we do, our relative weight diminishes.

China has overtaken Germany as an industrial export power in key sectors of the future, including electric mobility, decarbonization, and artificial intelligence. This was not a sudden rupture but a gradual process. In many ways, it is the story of the twenty-first century.

How does your diagnosis differ from the narratives of decline promoted by the political right?

When the right speaks of decline, it usually refers to the alleged decline of free speech, the power of media elites, or the supposed weakening of the national body through migration. The argument is often that if enough people were deported, everything would return to normal. I consider that analysis largely mistaken, as well as the solutions derived from it. However, I also believe it is wrong to assume – as many liberals or people on the left do – that everything is essentially fine and that we merely need more of the same. My concept of decline is neither national nor Eurocentric. It is fundamentally comparative.

What led you to formulate this diagnosis of relative decline or erosion?

For me, the decisive factor was personal experience – moving back and forth between Hong Kong and Berlin. Hong Kong was never a democracy, but under British rule it was governed by the rule of law. This changed during the Covid period with the National Security Law of 2020. Yet daily life in Hong Kong continued to function remarkably well.

Germany, by contrast, seemed increasingly dysfunctional. I had access to the BioNTech vaccine in Hong Kong before my mother did in Germany, despite the fact that she belonged to a high-risk group. In other words, the research was conducted in Germany, but distribution worked faster elsewhere. At the same time, Germany was debating the Corona warning app and struggling with broader digitalization problems. Many people can tell similar stories: digital systems that fail, trains that do not run on time, schools that are deteriorating.

These are moments when it is entirely reasonable to speak of signs of decline. Such problems must be taken seriously and addressed if we do not want to leave the field open to the political right.

Should Europe accept the reality of its relative decline?

Yes. And it should seek to shape that reality rather than deny it. What I do not share is the idea that Europe must now become a great power in its own right. First, for historical reasons – we know where great-power thinking has led Europe in the past. Second, because I simply do not believe it is realistic. Europe does not have the potential to become another China or another United States.

We should abandon these fantasies of great-power status. The First World War was a world war because Europe effectively owned the world at the time. Today, there is a war in Europe – and nobody else is fighting in it.

What would a realistic European path look like then?

First, we should recognize that relative decline is not necessarily a bad thing. The other side of the equation is the rise of others. From a cosmopolitan perspective, that is actually some- >

thing to welcome. The next step is to ask a very concrete question: Who is genuinely threatening Europe? At present, the answer is Russia in Ukraine. In my view, Europe could deter Russia if it pooled the resources it already possesses. The issue is not the overall level of spending but the degree of integration. That is why I am sceptical when Germany speaks of once again becoming Europe's largest military power. A more sensible approach would be the integration of European armed forces.

heavily dependent on both the United States and China in key areas. Should strategic autonomy therefore be the highest priority?

Yes, but for me that is precisely the consequence of this new situation. The crucial question is whether new investments will strengthen NATO or build genuine European autonomy. My answer is unequivocally the latter. This means gradually reducing dependencies and strengthening Europe's own capacity to act. However, this should be understood as a medium-term process

was indeed shaped by a sense of farewell and nostalgia. Perhaps it also reflected a farewell to a sense of security that I, as a millennial growing up in Germany, had long taken for granted. The book primarily describes a condition and its historical origins. The real challenge is to develop political responses to that condition.

And what might such a response look like?

I am often struck by the extent of European pessimism. Europe faces far fewer territorial threats than many other regions of the world. It remains highly

“I am often struck by the extent of European pessimism. Europe faces far fewer territorial threats than many other regions of the world.”

Daniel Marwecki

And beyond defense?

First, defense capability through integration. Second, decarbonization. Europe must find ways to advance the energy transition while engaging intelligently with the economic realities of China. Third, international law and international institutions. Europe talks extensively about international law but does not always apply it consistently. This kind of double standard is becoming increasingly unsustainable. The less powerful one becomes, the more dependent one is on rules. That is why reforms of international institutions also belong on the agenda – including reform of the United Nations Security Council.

Many would argue that Europe remains

rather than an abrupt rupture.

Even if Europe were one day to occupy a genuinely non-aligned position between China, Russia, and the United States, its cultural ties to America would remain far deeper than its ties to China. The immediate objective is therefore greater autonomy. The concepts already exist; what matters now is pursuing them consistently and incrementally.

You write that the traditional dream of home ownership and secure middle-class prosperity has increasingly become a utopia. That sounds rather bleak. How can a more positive perspective emerge from this diagnosis?

When I wrote „Die Welt nach dem Westen“ (The World After the West), the tone

prosperous and possesses social-democratic achievements that were fought for over generations. These strengths can serve as a foundation. Europe can draw upon everything in its history that has worked well in order to find a dignified place in this new world.

What do you mean by dignity in this context?

Dignity begins with acknowledging that the world is changing. The centres of power are shifting. The world is becoming multipolar – or whatever term one prefers to use. That is simply a fact. As other regions rise, new sources of prosperity and cooperation emerge. Europe does not have to lose in this world.

When I argue for the development of >

a new political narrative, it is not because I possess a ready-made solution. It is more an optimism of the will. And I believe that this historical moment requires exactly that.

Is Germany, with its tendency toward intellectual self-absorption, even capable of such a shift?

To be honest, I often have the impression that Germany is primarily occupied with itself. My first book began with the sentence: "When Germans talk about Israel, they are really talking about themselves." At the time, this referred to Germany's past and the Middle East conflict. Today, I think the pattern extends much further.

In what sense?

Germany often talks about the world while actually talking about itself. The result is a kind of simulation of knowledge. We discuss issues endlessly and therefore assume we are well informed. Yet in reality, we often know surprisingly little about other societies.

I call this the "Karl May syndrome."

Karl May largely invented both the Wild West and the Orient – and became enormously successful in doing so. That tells us something about the German way of looking at the world. Germany is large enough to develop its own discourse. But it is too small for that discourse to shape the world. Perhaps that is part of the problem.

What ways of thinking and what capabilities do we need for what you call a "dignified management of decline"? Perhaps something similar to the mindset required for a marathon?

It would be helpful to develop a sense that the world is larger than it appears on our mental maps, and that the current shift in power is, in many respects, something entirely normal. The re-cen-

tering of Asia is not unnatural. That matters because it makes developments appear less dramatic. Suddenly, the marathon no longer looks like a collapse but rather like the beginning of a new stage.

What mindset does Europe need for this long journey?

Perhaps the metaphor of martial arts is even more helpful than that of the marathon. When you learn martial arts, you learn how to fight – but exclusively for self-defense. That could also serve as a model for Europe. Defensive capability: yes. A desire for confrontation: no. I have the impression that violence is once again becoming normalized in international relations. When military actions are described as "dirty work," or when the destruction of Gaza is portrayed as the defense of values, it inevitably changes the way we perceive war.

What does it mean to you personally to be German? Or European?

I do not think these are identities one actively chooses. One simply is. That is why I also find certain forms of identification problematic. We can observe this, for example, in relation to Israel and Palestine. People from Europe or Germany travel there and then come to identify completely with one side – either Israel or Palestine. I consider both positions problematic. Just as problematic as an entirely uncritical identification with the West or with any other grand historical narrative.

What do you consider "typically German" about yourself?

Probably a certain Protestant severity. Perhaps also a somewhat pessimistic and serious view of the world combined with an almost compulsive determination to find something positive in it nonetheless. ■

Beyond Control

Modernity has largely understood the future as an object of strategic design. Yet the more uncertain the world becomes, the more apparent the limits of planning and control. Therefore we need a reassessment of trust – as a necessary complement to strategic action.

Strategy and trust are not merely two different ways of acting. They are two different ways of inhabiting time affectively. While strategy transforms the future into an object of calculation, planning, and control, trust organizes a relationship to time that is shaped by vulnerability, expectation, and the renunciation of complete security. This is where the philosophical point lies. The difference between strategy and trust is not merely epistemic or institutional. It is affective. To what extent can – or should – we trust a strategy?

THE AFFECTS OF STRATEGY

In the texts assembled here, strategy appears as a mode of securing time. It transforms the future into a space of anticipation in which possibilities are modeled, risks assessed, and actions organized according to calculable trajectories. Its promise is not merely cognitive but affective in nature:

Strategy reassures. It provides the emotional relief that comes from experiencing the future not as an open threat but as a

manageable scenario. Yet this reassurance comes at a price. For wherever the future is processed through the lens of strategic rationality, an affective grammar of tension emerges. Every deviation from the plan appears as a disruption, every delay as a deficiency, every contingency as an irritation of an aspiration that reveals itself precisely through its orientation toward control.

Strategic time is therefore never simply calm. It is latently nervous. It produces not only security but also a persistent mistrust of the unplanned. In this sense, strategy is an affective economy of control. It channels anxiety not by eliminating it, but by translating it into operational forms: forecasts, timelines, milestones, and scenarios. What appears to be the rational management of the future is therefore always also the organization of affects – above all, the disciplining of unease through procedures of anticipation.

TRUST AS A RISKY MODE OF TIME

Trust, by contrast, does not signify a mere absence of strategy. It represents a different affective relationship to time. Trust >

TEXT_ Birger P. Priddat

Prof. Dr. em. Birger P. Priddat is Professor Emeritus of Economics and Philosophy at the University of Witten/Herdecke. Previously, he held the Chair of Political Economy at Zeppelin University. He is a Senior Research Fellow at the Witten/Lab of the Studium Fundamentale. His most recent publications include *Democracy Trumped?* (2026) and *The Market of Friendly Citizens in Wealthy Athens* (2025).

KEY MESSAGES

- **Strategy** relies on anticipation and control, trust on the capacity to endure uncertainty.
- **Strategies generate a permanent tension** because every deviation from the plan appears as a disruption.
- **Trust is not a naïve attitude** but a form of sovereignty under uncertainty. It combines vulnerability with the capacity to act.
- **In complex and dynamic environments**, the logic of control increasingly reaches its limits.
- **A future-ready strategy** depends on responsiveness, learning capacity, and the confidence to remain effective.

*“Trust opens
a form of strength
that is grounded
not in control
but in the capacity
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indeterminacy.”*

Birger P. Priddat

arises not because sufficient knowledge is available, but because one recognizes that knowledge can never be sufficient to close the future completely. Those who trust expose themselves to the possibility of disappointment without therefore abandoning action. This point is affectively decisive.

Trust is not naïve but courageous; not blind but exposed. It requires a willingness to engage with a future that may wound us – and not to translate that vulnerability immediately into mechanisms of protection. This fundamentally distinguishes trust from the strategic attitude. Its focus is not the neutralization of uncertainty but the affirmative negotiation of uncertainty in social time. Trust connects vulnerability and sovereignty.

Vulnerable is the person who exposes themselves. Sovereign is the person who does not regard every exposure as a defect that must immediately be secured against. Trust is therefore affectively paradoxical. It makes us vulnerable without disempowering us. And it opens a form of strength that is grounded not in control but in the capacity to endure indeterminacy.

THE GIFT OF TIME, EXPECTATION, AND PATIENCE

The affective structure of trust becomes particularly visible in gestures that function as forms of giving time: a handshake, a promise, an appointment. Such acts divide the future before it is known. They are not information about what is to come but anticipatory commitments through which people align themselves with one another even though the conditions for fulfillment cannot be fully guaranteed. As promises, they are gifts to others – expressions of a

willingness to keep one's word. And they are promises to oneself as well. Affectively, these gestures create an in-between space.

This space is neither a mere void nor a deficiency. It is the very form of social time in which expectation, patience, and perseverance acquire meaning. Strategic rationality tends to regard such spaces as inefficient because they cannot be fully operationalized. Trust, by contrast, depends precisely on the fact that not everything is immediately translated into certainty. This reveals that patience is not a passive virtue. Within an affective philosophy of trust, patience denotes the capacity not to occupy time immediately with demands for security.

Expectation then becomes more than a preliminary stage of knowledge. It becomes an independent way of relating to what is yet to come. Perseverance, in turn, is the form through which trust asserts its own temporality against the pressures of acceleration.

THE INTRUSIVENESS OF STRATEGIC TIME

From this perspective, the critique of strategy can be formulated more precisely. The problem is not planning as such, but the claim of strategic time to become the universal model for relating to the future. Where all future possibilities appear only as objects of calculation, not only is contingency suppressed, but the affective plurality of human action is flattened. Strategic time leaves little room for legitimate forms of hesitation, hope, waiting, or endurance. It accepts affects only insofar as they can be translated into decision-making energy.

This is precisely where its intrusiveness lies: It seeks not only to organize action but also to determine the emotional grammar through which the future may be experienced. Trust is therefore not merely a counterconcept. It is a critique of the affective impoverishment that accompanies the universalization of strategy.

At this point, the diagnosis of a post-strategic condition can be sharpened. As late-modern dynamics undermine the conditions for stable calculation, strategy loses not only its epistemic certainty but also its capacity to provide affective reassurance. In its place emerge panic, frantic replanning, or cynicism. The crisis of strategy is therefore also a crisis of the emotions through which modern societies have historically stabilized their relationship to the future.

TRUST AFTER CONTROL

Trust ultimately appears as the mode of time that begins where the hubris of control ends. It does not simply replace strategy. Rather, it limits strategy's claim to >

*“An alternative
strategy
would involve
the cultivation of
responsiveness
rather than
anticipation.”*

Birger P. Priddat

universal validity and reminds us that the future must not only be calculated but also collectively endured, anticipated, and shared. In this sense, trust is not a residual category from a premodern world. It is a demanding form of affective rationality under conditions of radical uncertainty.

The philosophical point lies in the fact that trust affirms a future it does not possess. It holds that the other person, the institution, or the shared practice is more than the sum of predictable behaviors. This affective stance changes the quality of temporal experience.

Where strategy turns the future into a route to be traversed as efficiently as possible, trust turns it into a space in which something can emerge between us that no one fully controls. Expectation, patience, and perseverance are therefore no longer understood merely as waiting for a plan to be fulfilled. They become positive affective capacities: the courage to relinquish narratives of certainty and to endure uncertainty together.

AN ALTERNATIVE STRATEGY

An alternative strategy would therefore not consist in refining forecasting tools or further densifying architectures of control. Instead, it would involve the deliberate cultivation of responsiveness rather than anticipation. In place of an approach to contingency that treats it primarily as a risk to be minimized, there emerges a practice that understands change as a relational event – something to which one responds rather than something one preempts.

In this sense, composure is not a passive attitude but a form of situational sovereignty: the ability to suspend one's

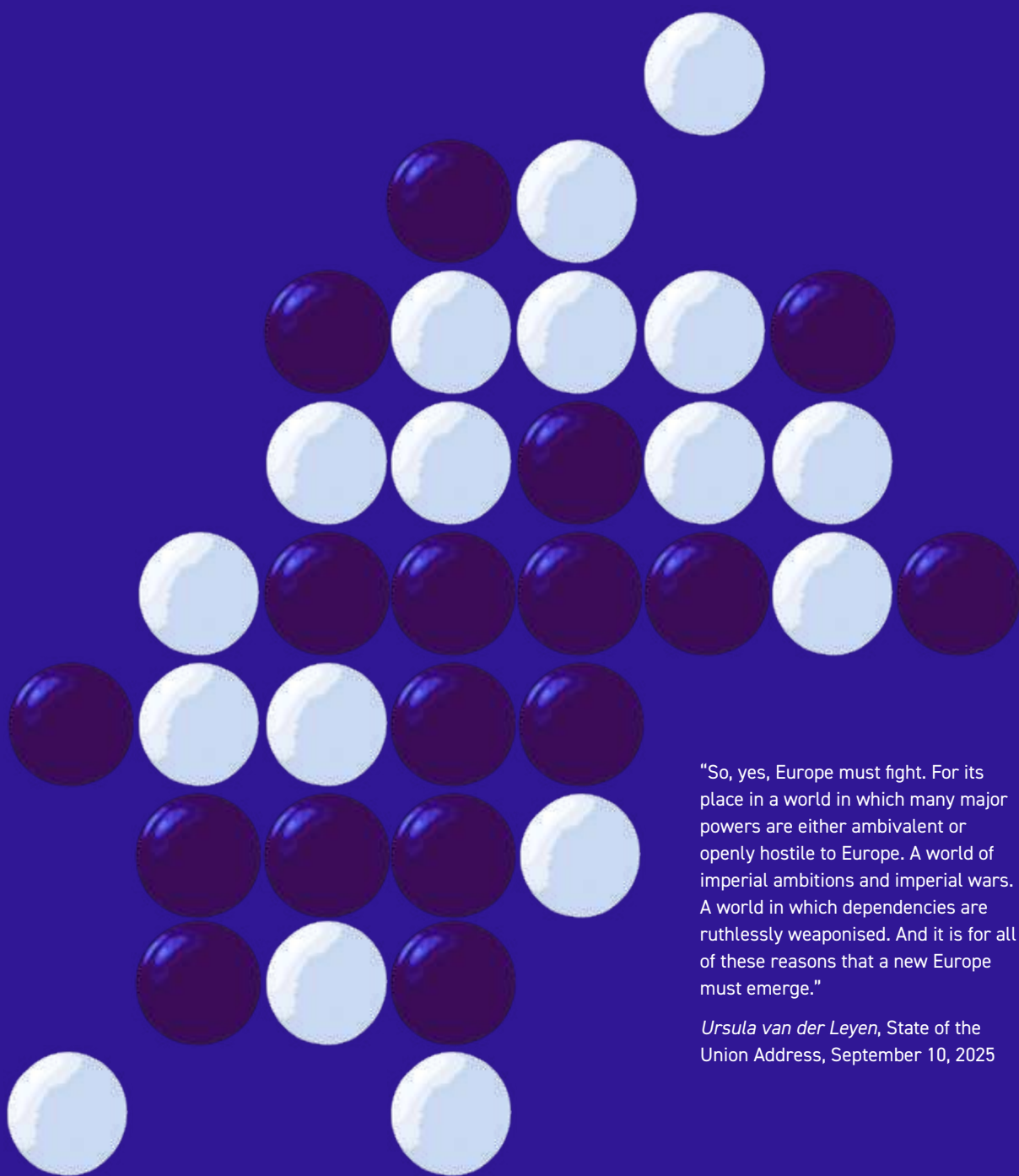
expectations without becoming incapable of action. Agility then appears in a different light. It is no longer accelerated adaptation within predefined objectives but an openness to revising those objectives themselves. It rests less on flexibility in an instrumental sense than on epistemic humility toward the inherent unpredictability of social processes.

Institutionally, this would translate into forms of organization that focus less on rigid goal attainment and more on learning-oriented procedures: iterative coordination, reversible decisions, and distributed responsibility. In this way, the emphasis shifts from a teleology of goal achievement to a practice of collective becoming.

Unexpected changes lose their status as disruptions of a plan and instead become moments in which the quality of relationships – between actors, with institutions, and with one's own practices – is determined. Composure is then no retreat from

uncertainty. It is a way of orienting oneself within uncertainty without prematurely closing it down. What emerges is a distinct form of trust – fully compatible with strategy itself: the confidence that one will remain capable of effective action even in the face of surprise. ■

02_ Geopolitics & Economics



"So, yes, Europe must fight. For its place in a world in which many major powers are either ambivalent or openly hostile to Europe. A world of imperial ambitions and imperial wars. A world in which dependencies are ruthlessly weaponised. And it is for all of these reasons that a new Europe must emerge."

Ursula van der Leyen, State of the Union Address, September 10, 2025

“2030 Is a Defining Horizon”

French security expert Elie Tenenbaum believes Europe has reached a strategic turning point. The real challenge lies in relearning how to think about security policy in terms of power – and in making deterrence credible once again.

Russia's invasion of Ukraine shattered many long-held assumptions in Europe about peace, interdependence, and post-Cold War stability. In your view, what is the single biggest strategic illusion Europe has now been forced to abandon?

I see at least three big “hangovers” Europe is now struggling to overcome. The first is the peace illusion. The major war that broke out in 2022 in Ukraine stripped the continent of one of its key comparative advantages: a peaceful, secure neighborhood. It made a credible military threat against the security order on which Europe used to thrive, a community of democratic values and economic interdependencies. Europe now has to live like most regions of the world: under severe, immediate security threats that must be met with serious defense spending. The second is the deterrence illusion. Since the Cold War, Europeans have

been raised up into assuming conventional war was impossible because it would trigger nuclear escalation. This is wrong. For decades, nuclear deterrence experts have tried (and failed) to explain that nuclear weapons protect the vital interests of the state that wields them and possibly, though hotly debated, those of its allies they decide to protect if a credible posture is built to this end. Russia was clearly not deterred from invading Ukraine, and is not deterred from waging large hybrid campaign against NATO. We now see how many scenarios there are in which nuclear weapons won't deter even high-intensity aggression against our nuclear alliance – including against its own nuclear members, France and the UK – unless we build a credible conventional escalation ladder forcing the adversary to contemplate an unavoidable end state. >



INTERVIEW_ Élie Tenenbaum

Dr. Élie Tenenbaum is Director of the Center for Security Studies at the Institut français des relations internationales (Ifri) and is widely regarded as one of France's leading security experts. His research focuses on European security and defence policy as well as strategic questions relating to the international order. A trained historian, he studied at Sciences Po and was a visiting scholar at both Columbia University and King's College London. His most recent publication is *Mapping the MilTech War: Eight Lessons from Ukraine's Battlefield* (2026).

KEY MESSAGES

- **The Ukraine war** has shattered core European illusions: the belief in lasting peace, the reliability of nuclear deterrence, and the permanence of the transatlantic alliance.
- **Europe's greatest weakness** lies in its inability to translate economic strength into strategic and military power.
- **Germany is emerging** as Europe's military integrator. The deeper challenge, however, is a cultural shift toward a more strategic understanding of power and deterrence.
- **Credible deterrence** exists only when Europe is both willing and able to impose meaningful costs on potential adversaries.
- **By 2030, Europe's security** will depend on combat-capable Ukraine, stronger armed forces, and the ability to complement U.S. security guarantees without replacing NATO.

The third shattered illusion, of course, is transatlantic unity: the Trump administration's long-announced "burden shifting", its landing point still unclear, arriving at the worst possible moment: heightened Russian threat, with Moscow gearing up to fragment a European security order weakened by a flinching US commitment.

How difficult is it for Germany to become a genuine military power again after decades of political restraint?

Yes, the momentum from the Ukraine-related *Zeitenwende* and the Trump-related *Epochenbruch* points to a substantial, long-term transformation in how Germany sees its defense policy and, above all, its role in European security. Many have struggled to adjust, especially in France, because they don't see in Germany the attributes that, to their eyes, constitute military power: risk-taking, thinking bent toward offensive action and cost-infliction, acceptance of escalation and of the inevitable attrition of one's own forces. And this is true: Germany has long found it hard to view itself as a war-making (let alone war-winning) power.

That is a work in progress, grappling with military as much as national culture, but it shouldn't overshadow what has been achieved. Germany now mostly sees itself as a strategic and military integrator: a hub into which smaller nations can plug to generate the missing mass of maneuver for the collective defense plans. European fragmentation is precisely what keeps the continent from fielding a coherent force and a mass-oriented defense industry; German spending and investment in NATO structures are bringing cohesion. It is also showing firm commitment to NATO's Eastern Flank after years of

shunning forward deployments of real consequence. A German brigade in Lithuania is a de facto tripwire: aggression against the Baltic states will carry severe German consequences. Some mocked the Bundeswehr for wanting full family infrastructure before deploying troops to Vilnius, but to me the soldiers' families signal resolve and the will to fight even more than the personnel themselves, in a way they will be what the soldiers will be fighting for. Finally, like Poland a decade ago, Germany is deeply rewiring its force structure for the large-scale continental warfare Russia may wage against Europe. Unlike France and the UK, which mostly reinforce an existing expeditionary model, it is genuinely shifting gears. The challenges are immense, in terms of personnel above all, but the direction of travel is there for everyone to see, and once such an instrument appears on the horizon, the strategic mindset will finally have something to feed on.

Has the European Union developed enough geopolitical instinct to survive a renewed era of strategic competition?

First, I would distinguish Europe from the EU. The latter is well suited to coordination, cooperation and regulation, but I doubt it will acquire what engaging strategically with great powers demands (speed, agility) anytime soon. Europe, by contrast, is a set of countries able to form strategic coalitions, through existing frameworks (the EU or NATO) or ad hoc formats like the Coalition of the Willing on Ukraine that the EU may accompany and support. The question therefore is not whether Brussels has acquired an strategic instinct, but whether the European capitals have. And there, beneath the surge in budgets and rhetoric, two

reflexes remain underdeveloped.

The first is cost-infliction. Europeans have learned, painfully, to think about resilience (absorbing a blow, hardening a grid, protecting a cable, debunking a hostile narrative) but barely about imposing a cost on whoever delivers it. In the hybrid domain we build resilience and raise awareness, yet almost never respond dynamically to the aggression itself. A cable is cut, a sabotage cell rolled up, a network exposed, drones hover over strategic sites and the reflex is to patch, to communicate, to add another layer of protection, rarely to make the perpetrator regret acting. We have removed the adversary from our own equation, whereas strategy is about dialectics, "reciprocal action". The second missing point, in the military realm, is the absence of a theory of victory. European force models, especially in Germany, are overwhelmingly defensive: air and missile defense, "drone walls", fortified lines, the protection of territory. All necessary, none sufficient. A posture built only not to lose is not one that wins, and an adversary who knows you have no concept of how the war ends in your favor is only half-deterred. Deep strike, holding at risk what the enemy values, the willingness to inflict cost on his soil and against his command – these sit uneasily with European strategic culture, and are exactly what a credible posture demands.

Germany's rearmament has triggered both hope and unease across Europe. What's your view?

I think there is no strong Europe without a strong Germany. Geographically, demographically, politically and economically, Germany is the beating heart of Europe, whether we like it or not. ➤

The other members each have a great deal to bring to the table, especially nuclear powers like France and the UK, and frontline states like Poland, but if you have a big hole in the middle, it just won't work.

That being said, I think Germany still needs to figure out how to work with the other large nations. Its strategic-integration offer can be attractive to smaller states, but it cannot expect France, Poland or even Italy to accept German leadership in every dimension. Even with smaller European states, Germany needs to be cautious in how it exerts its leadership. For France, German centrality in defense is a new reality that will take time to adjust to. In the industrial dimension especially, we will have to accept that Berlin is now a (maybe 'the') main engine, and we will have to bandwagon on a number of projects if we don't want to end up too isolated. That doesn't mean other coalitions within Europe cannot exist (with Sweden, Poland and so on), but some synergies will have to be found to reach the industrial mass we need to live up to the current challenges.

You note that Russia's strategy extends far beyond the battlefield itself into cyberwarfare, disinformation, energy pressure, and psychological intimidation. Are Europeans still too narrowly focused on conventional military threats?

It's less a matter of focus and balance than of integrating existing tools. Russia sees no essential difference between hybrid activities and open aggression, it's one strategic design. Beforehand, informational attacks and covert actions "shape" the battlefield, sow dissent, weigh on perception, weaken the target's will, gather intelligence, test reactions. Once war breaks out, operations are supported by non-kinetic, non-linear and asymmetrical tactics. Conversely, in Russian thinking, violence boosts propaganda: disinformation in Georgia, Moldova, Romania or Germany sees its effects amplified against the backdrop of the war in Ukraine where Russia demonstrates its hard power. Every kinetic action against Ukraine is also a non-kinetic message aimed at other states.

In Europe we see these as dissociated modes of action. Much has been spent

to raise awareness and resilience against hybrid threats, at EU and national level, but we still struggle to approach them strategically and spend little time on how our response affects the adversary's own will and means to attack. Deterrence has deserted counter-hybrid thinking: flying drones over NATO HQ or a French submarine base now reads as "low risk" in the Kremlin. Yet, we have intelligence on key actors in the Russian hybrid ecosystem: some of it is reachable legally through sanctions etc., others more creatively. Clear messages could be sent, sometimes with fewer resources.

Is there still a meaningful distinction between "European defense" and "NATO defense"? What could be a feasible "Plan B" when the US leaves NATO?

In its serious form, "European defense" is the European pillar of NATO: the same forces, command structure and standards, with Europeans paying and commanding more. A German brigade in Lithuania or a French battlegroup in Romania is NATO and European at once. The real question is what happens if the Americans walk away. Here, we should neither yield to denial, nor to panic. NATO is doctrine, a command architecture, a habit of interoperability built over seventy years: that shell does not evaporate because Washington reduces its commitment. That's why I don't think it is realistic to invest the EU with such competency, nor to build a new organization from scratch: we just don't have the time for it. Depending on the size, scope and speed of the US "burden shifting", it will up to Europe to make the existing machinery run with fewer, or caveated, Americans in it. Concretely: filling the enabler gaps the US provides almost alone – strategic intelligence >

“Geographically, demographically, politically and economically, Germany is the beating heart of Europe, whether we like it or not.”

Élie Tenenbaum

and reconnaissance, air-to-air refueling, suppression of enemy air defenses, strategic lift, satellite communications, the costly capabilities where Europe is hollow – and, most delicate, the nuclear dimension. Extended US deterrence can't be replaced one-for-one, but the French and British arsenals, with the conventional escalation ladder I mentioned, can underwrite a posture forcing Moscow to contemplate an unacceptable end state. The realistic objective is a more strategically restrained US that stays in the Alliance while Europeans hold more of its key positions; that, we can work with. The true nightmare is the opposite: an America that stays only to "kill-switch" NATO's command and control from within.

Short of that, a restrained US is not the end of NATO, it is the NATO we will have to learn to operate. Nor should we discard ad hoc coalitions – willing nations assembled around a contingency, sometimes rebranding NATO structures, as with the Ukraine Defense Contact Group: flexibility is part of the answer, not a betrayal. None of this is achievable by 2027, but the worst posture is to treat Plan B as taboo: quietly building the European pillar so it could stand alone if it had to is the best insurance it never will have to.

The war in Ukraine has also exposed profound differences in strategic culture between Western and Eastern Europe. Have countries like Poland and the Baltic states understood Russia more clearly than France or Germany did?

They certainly did! Some have been ringing alarm bells since the days of Chechnya in the late 1990s. That being said, even within Central Europe important differences exist – think of Slovakia and Hungary, for instance,

“The uncomfortable truth is that I do not believe Europe will, by then, be militarily ready to uphold the current defense plans.”

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compared with Poland and the Baltics. I believe there will always be varying threat assessments depending on where you sit and what your history vis-à-vis Russia is. And therefore, the Nordic-Baltic countries should not be too frustrated when those differences remain. Russia also has different plans and objectives in Central and in Western Europe. What we need to work on is factoring those differences into our plans, so that they do not become a massive impediment to our deterrence posture vis-à-vis Russia.

In your analysis, Europe's main weakness remains its difficulty in converting economic power into military power. Why has Europe historically struggled with this translation of wealth into strategy?

Because it has lost sight of the idea that geopolitical actors may be moved by something greater than economic interests. Europe has grown so used to thinking that economic cooperation is a win-win game that it has found it extremely hard to conceive that apparently benign instruments such as the EU-Ukraine Association Agreement offered to Kyiv in 2013 could be read as a geopolitical move threatening Russia. Then, some civil servant in Brussels finalized a thousand-page document, and the next morning Europe found itself in a quasi-war with Russia, without grasping the connecting logic. Now that Eu-

rope feels itself under threat, it is starting to better comprehend geopolitical actors. That doesn't necessarily turn it into one, though, because of political fragmentation, divergences in threat perception, and even divergent strategic aspirations.

If we imagine Europe in 2030, what would a credible and sustainable European deterrence posture against Russia actually look like – militarily, politically, and psychologically?

2030 is a defining horizon for Europe, and a most dangerous one. By then the war in Ukraine, at least in its current form, will likely have wound down, potentially freeing a large part of a reconstituted Russian military. And American burden-shifting may have gained momentum: logistical and political constraints make a massive, effective US withdrawal hard before 2028, but 2030 is within reach. The uncomfortable truth is that I do not believe Europe will, by then, be militarily ready to uphold the current defense plans, which follow an "American way of war" pattern. Much of what is now being invested should be starting to deliver: 5th-generation aircraft in service, ammunition stockpiles rebuilt, main ground platforms fielded, tactical drones at scale, readiness rising, some force-structure expansion. That is real. But the big holes will still be open, >

because we won't have had time to field home-grown solutions en masse where we are most exposed: deep precision strike, affordable and dense ballistic-missile defense, early warning, an autonomous European command-and-control architecture, an integrated nuclear deterrent: these capabilities take a decade or more, and a political decision we have barely begun to take. So, a realistic 2030 posture is one of quick fixes and managed risk rather than full self-sufficiency. Two seem decisive. The first is Ukraine: keeping Kyiv in the fight and (while, I'm afraid, remaining outside NATO, for lack of political consensus) sealing a strategic compact so that Ukrainian forces keep tying down a large share of the Russian army on the south-eastern Flank, diverting it from the Baltic and the High North. A Ukraine still in the field is, to put it bluntly, the most cost-effective key to European security we'll have in 2030. The second is a workable denial strategy in the northern and central theaters: the ability to halt a limited Russian probing of the Alliance, make a fait accompli too costly to attempt, and deny Moscow the quick win it seeks. Politically and psychologically, the bar is almost as demanding. By 2030 we will need at least minimal cohesion – riding out the populist wave by managing expectations honestly rather than promising an autonomy we cannot yet deliver – and to have deterred Russian interference and destabilization through muscled, visible signaling rather than the patch-and-communicate reflex. Do that, and 2030 is survivable even with the holes; fail, and the gap between our rhetoric and our means is the opening Moscow is looking for. ■

“A Ukraine still in the field is the most cost-effective key to European security we’ll have in 2030.”

Élie Tenenbaum

“Europe Has Opportunities to Strengthen the Alliance”

For Nadia Schadow, the future of Western democracies will be determined by their ability to solve concrete problems. The former White House strategy adviser discusses Donald Trump’s understanding of strategy, Europe’s innovation deficit, and why democracies must once again become faster and more effective.

Nadia Schadow, how would you define a national security strategy?

Nadia Schadow: In democracies such as the United States, Germany, and many allied countries, a national security strategy provides strategic direction. It identifies a country’s interests, its threats, and its opportunities. At the same time, it outlines the instruments and tools needed to protect those interests, seize opportunities, and respond to challenges.

What is often overlooked is that strategy is not only a document. The process behind it matters just as much. Developing a strategy brings together agencies, organizations, and decision makers. It creates a framework for discussing threats, challenges, opportu-

nities, and national objectives. Only then are these ideas translated into a written document. In my view, the process itself is equally important.

You played a key role in developing the 2017 U.S. National Security Strategy during President Trump’s first term. Looking back, what were the strategy’s core objectives and guiding principles – and how does it differ from the 2025 strategy, released in December?

The 2017 strategy reflected President Trump’s views. The major themes had already been present during his campaign and throughout his first year in office. It was a White House document, not a personal statement by any individual involved in drafting it. My role was to bring together the various



INTERVIEW _ Nadia Schadow

Dr. Nadia Schadow is a senior fellow at the Hudson Institute. Previously, she served on the National Security Council (NSC) as Deputy National Security Adviser for Strategy, where – as the architect of the 2017 National Security Strategy – she coordinated strategic analyses and developed policy initiatives across multiple government departments at the most senior levels. While at the NSC, Nadia also advanced the concept of a National Security Innovation Base (NSIB) to assess the potential impact of disruptive technologies on U.S. national security policies.

KEY MESSAGES

→ **Strategy** is not merely a document; it is above all a process of establishing shared priorities.

→ **Europe’s greatest weakness** lies in confusing procedures with political effectiveness.

→ **Military, technological, and economic capabilities** are the foundation of credible deterrence.

→ **Artificial intelligence** will redefine the balance of power between democracies and authoritarian regimes.

→ **Despite ongoing tensions**, the transatlantic alliance remains a strategic advantage for both sides.

actors and perspectives and help translate those ideas into a coherent strategy. The document rested on four pillars: protecting the American homeland, promoting American prosperity, preserving peace through strength, and advancing American influence. The central argument was that the world is fundamentally competitive and that the United States needed to engage more effectively in that competition. China played a major role in that analysis. The strategy recognized that China's growing influence was reshaping the international system. What is interesting is that this theme survived political change. The Biden administration largely built on that assessment, and the 2025 strategy continues to reflect it as well.

What has changed most since then?

Several things. One is the growing cooperation among China, Russia, Iran, and North Korea. Many observers now speak of an emerging axis of aggressors or a quartet of chaos. Their cooperation is more systematic than it was in 2017. Another major change is technology. The pace of technological development has become extraordinary. Many of the issues discussed in 2017 remain relevant, but the challenges have intensified dramatically. This affects democracies, domestic politics, international competition, and increasingly the race around artificial intelligence. The speed of change places enormous pressure on institutions and decision making.

Europeans often point to differences in the transatlantic relationship, especially in the 2025 strategy. How do you see that?

I understand why many Europeans reacted negatively, particularly to the tone. But I see much of it as an extension of a longstanding theme from

President Trump: burden sharing. The frustration with Europe and with the European Union did not suddenly appear in 2025. It was already present during the first Trump administration. President Trump has consistently expressed impatience regarding defense contributions, trade issues, and what he views as bureaucratic constraints within the EU. I understand why that can seem puzzling or frustrating from a European perspective. At the same time, the underlying concern about burden sharing has been a recurring feature of his approach - as well as of virtually every US president since Kennedy - for many years.

Many Europeans would say the issue is not only burden sharing. The issue is also about the political direction Europe is taking and how that is viewed by the Trump administration.

I think that is true. If you look at Vice President Vance's Munich Security Conference speech, you can see part of that frustration. The argument, as I understand it, is that Europe has become reluctant to speak confidently about the values, achievements, and broader significance of Western civilization. That, at least, seems to be part of the concern behind such speeches. I was not involved in drafting them, so I have no insider knowledge. But I do think there is a debate in Washington about fundamental questions. What is the West? What are we defending? What are we willing to fight for? Personally, I think those are legitimate questions. People may answer them differently, and they can certainly be interpreted in different ways. But allies should be able to discuss them openly and work through those disagreements together.

How should Europeans understand this mixture of partnership on the one hand and political or ideological criticism on the other?

The key words are context and emotion. It is important to keep both in mind. If you look at the history of the transatlantic alliance, tensions are nothing new. I was recently reading documents from the Eisenhower era. There was frustration with France's pursuit of strategic autonomy. There were disagreements during the Kennedy years and later under Nixon. The alliance has always experienced periods of conflict and misunderstanding.

The difference today may be that political leaders are less willing to smooth over disagreements. In earlier decades there was often an effort to patch things up and conceal tensions behind diplomatic language. Today those disagreements are expressed much more openly. At the same time, I believe Europe has opportunities to strengthen the alliance. President Trump will not be president forever. We do not know who the next American president will be. The alliance should use the coming years to address the challenges it faces regardless of who occupies the White House.

What kind of challenges do you have in mind?

There is no shortage of work. NATO has to think about deployments and redeployments. It must strengthen the security of the Baltic states. Europe and the United States need to reconsider energy dependencies and continue reducing vulnerabilities vis à vis Russia. There is also the question of artificial intelligence. Europe tends to approach AI through a more regulatory and risk conscious lens. We need to >

“The United States and Europe should work together on concrete projects and practical objectives.”

Nadia Schadlow

understand how that will affect the operational capabilities of the alliance. These are substantial issues. My focus is always on strengthening the alliance through practical cooperation.

If we leave President Trump aside for a moment, what is the single most important condition for a healthy transatlantic partnership? Many people would probably answer: trust.

Trust matters, of course. But I would emphasize something else: capabilities. What we need are real military capabilities, genuine energy diversification, and a revitalization of European innovation. The United States and Europe should work together on concrete projects and practical objectives. In deterrence, political will is important. Yet capabilities are equally important. One way to navigate this difficult period is to focus on strengthening those capabilities and to use them as a foundation for cooperation, investment, and continued dialogue.

So real action matters more than declarations?

Exactly. There is plenty of work to do. I personally believe that a pursuit of strategic autonomy detached from NATO would be a mistake. It could leave Europe less able to defend itself while creating new fractures inside the alliance. Europe should rebuild its defense capabilities, but it should do so as much as possible within the NATO framework. The alliance can overcome disagree-

ments if it concentrates on strengthening real capabilities and expanding practical cooperation.

Let me return to President Trump. From a strategist's perspective, would you describe him as a strategist?

He is certainly unconventional. What stands out is that he is not constrained by assumptions about how things have always been done. That can create room for new approaches. Take the Abraham Accords. Many observers believed the idea was unrealistic. Yet the administration succeeded in changing relationships in the Middle East in ways that many experts had not expected. The same applies to process. President Trump is less attached to traditional White House procedures and less inclined to treat multilateralism as the default solution to every problem.

Many strategists might argue that Trumps unpredictability is the opposite of strategy.

Well, he might be unpredictable. But if you ask whether President Trump has a strategy, I would say yes. He has a strategy for energy independence. He has a strategy for innovation. He has a strategy for advancing American leadership in artificial intelligence. The fact that many people disagree with those objectives or with the methods used to pursue them does not mean a strategy is absent. Political preferences inevitably shape how people judge strategy. But viewed from a strategic perspective, President Trump is creating a very

different set of dynamics in the international system. Whether one approves of them or not, they are reshaping the global environment in significant ways.

Could disruption itself be a strategy?

I would distinguish between strategy and disruption. To me, strategy is about defining the outcomes you want to achieve. Disruption can be a tool for reaching those outcomes. What President Trump often does is question assumptions that others take for granted. Instead of spending years discussing an issue through established channels, he asks why it has to be done that way in the first place. If he believes a problem can be solved with a direct phone call, he will pick up the phone. That challenges a foreign policy community that is accustomed to certain processes and routines. Europeans, perhaps even more than Americans, often operate through established procedures and institutions. Trump starts from a different premise. He asks: Why are we doing it this way? How did we get here? And perhaps the lesson for all of us is that we will increasingly have to answer those questions. We can no longer assume that institutions and arrangements will justify themselves.

Why is that becoming so important?

Because younger generations no longer take these things for granted. In the United States, many students know very little about NATO, the postwar order, or why it was created. The

assumptions that shaped my generation are not automatically shared by younger Americans.

And I do not think this is only an American phenomenon. If you look at surveys among younger Germans, you often find a similar ambivalence. Support for NATO, willingness to defend allies, or even a sense of why the postwar architecture matters can no longer be assumed. That means we have to explain these institutions again. We have to refresh the arguments, demonstrate their relevance, and show why they continue to matter. Trump, in a way, is forcing that conversation. He is reminding us that the legitimacy of these arrangements cannot simply be inherited from previous generations.

What role should the United States play in the world?

I still believe the United States benefits from remaining a leading power, a country capable of shaping events and building constructive alignments with partners and democracies around the world. At the same time, we have to acknowledge reality. American power remains enormous, but it is no longer what it was in the decades immediately after the Second World War. Other countries have become stronger. Other militaries have become stronger. We also face significant domestic constraints, including a massive national debt and rising interest payments. So the challenge today is different. We cannot do everything. We have to prioritize. The objectives remain familiar: preserving peace, growing our economy, adapting to technological disruption, and working closely with allies and partners. But we must pursue those goals under very different conditions than before.

You often use the concept of „overmatch“.

What exactly does that mean?

At its core, overmatch is about preserving the ability to prevail if conflict occurs. It asks a simple question: How do you maintain advantages over your adversaries? That includes industrial capacity, access to critical economic inputs, resilient supply chains, and military capabilities that can actually be sustained in a prolonged crisis. It is fundamentally a competitive concept. Interestingly, it translates more naturally into defense than into other areas of government. Diplomats do not usually think in terms of overmatch. Development agencies do not either. But in the military realm, where competition and deterrence are central, it remains highly relevant.

Looking at technological change, artificial intelligence, and the broader transformation of the international system, do we need to rethink strategy itself?

The need for strategy will not disappear. Strategy is ultimately a way of thinking about desired outcomes. It is about deciding where you want your country to be in one year, five years, or ten years, and how it should position itself in relation to other countries. What is changing are the conditions under which strategy operates. Technology is accelerating everything. The speed of change creates enormous pressure on governments, institutions, and societies. We are witnessing a profound clash between old structures and new realities. Democratic institutions often struggle to keep pace. Citizens become frustrated. Expectations rise. Bureaucracies can seem incapable of adapting quickly enough. At the same time, technological change may either strengthen institutions or render some

of them obsolete. We simply do not know yet.

And what about artificial intelligence specifically?

That may be the biggest unanswered question of all. For a long time, particularly in the 1990s, many believed technology was inherently liberating. It was seen as a force that would spread freedom, strengthen democracy, and empower individuals. Today the picture is much more complicated. We can see how powerful these technologies are for authoritarian systems as well. So the question remains open: Will AI ultimately strengthen democracies or strengthen authoritarian regimes? I do not have a definitive answer. I am still trying to learn from people whose judgment I respect. But what is clear is that technology will reshape threats, opportunities, and strategic choices in profound ways.

The process of strategy making will remain essential. What will change are the circumstances, the challenges, and the speed at which leaders must respond. In many ways, we may be living through a transformation as significant as the Industrial Revolution. The difficulty is that, while we are inside it, we cannot yet fully see where it is leading.

Do you think democracies will prevail – and what can be done or must be done in order for them to prevail?

I think it's very hard to make good policy if you start from a mindset of decline and doom. Yes, I believe democracies can prevail. I hope they will prevail. But they have to deliver. They have to achieve outcomes more quickly and fulfill promises more effectively. And that's why I've been a critic of this constant default to a global approach. I think problems and solutions begin at >

“One of my concerns is that democracies too often confuse process with success.”

Nadia Schadlow

much lower local levels. One of my concerns is that democracies too often confuse process with success. We spend enormous amounts of time bringing everyone to the table, discussing every aspect of a problem, and building ever larger frameworks. Yet we do not always ask whether the process actually produces results.

That, in my view, is a weakness. It is a weakness that can be overcome, but only if democracies become more willing to work in smaller coalitions and focus relentlessly on solving concrete problems.

Is that weakness particularly visible in Europe?

Yes, I think it is. And what frustrates me is that it is largely self-inflicted. It is not something imposed by the United States, Russia, or China. Europe has created many of these obstacles for itself. When I look at the European Union, I often see a regulatory mindset and layers of procedure that are difficult to understand. I appreciate the logic behind the common market. I understand the historical rationale for European integration. But I sometimes struggle to understand why the focus has shifted so far toward process and regulation rather than outcomes. That is why the Draghi report resonated with me. I thought the diagnosis was excellent. It identified many of Europe's fundamental challenges very clearly. What surprised me was that some of

the proposed solutions seemed to rely on the very processes that had contributed to the problem in the first place. That is a debate I would actually like to have with my European friends because I am genuinely interested in understanding that perspective better.

When you speak with your European friends, what is the single most important message you would like to leave them with?

I would begin by saying that Europeans should remain confident about the transatlantic alliance. At the same time, they should remain realistic about the changes that are necessary. Europe has to meet the United States halfway on a number of important issues. Many of the concerns raised by President Trump are legitimate subjects for discussion, whether one agrees with his conclusions or not.

As allies, we should be able to debate these questions openly. We should be able to discuss burden sharing, economic growth, innovation, energy policy, and technological competition without immediately dismissing each other's concerns.

And what specifically should Europeans rethink?

I would encourage Europeans to engage more seriously with questions that are increasingly shaping political debate in the United States: What does Western civilization mean today? Why does it matter? What are the values that bind

democratic societies together? I also think there should be a more open discussion about economic growth. A growth agenda is not the same thing as a climate agenda. Both involve trade offs, and democracies need to be honest about those trade offs.

The same is true for artificial intelligence. Europe often approaches these technologies from a risk perspective. Risks are real and should be taken seriously. But there are also risks in excessive caution. A continent that fails to innovate can find itself falling behind economically, technologically, and strategically. Those are legitimate concerns and they deserve serious debate.

So despite all the disagreements, you remain optimistic?

Yes. I continue to believe that Europe and the United States are stronger together than apart. The alliance remains valuable. But the issues that define it today are different from those that shaped the transatlantic relationship in the 1980s, the 1990s, or even the early 2000s. We have to be willing to ask difficult questions about what works and what no longer works. The Trump administration has asked some of those questions. Europeans may disagree with the answers, but I do not think they should dismiss the questions themselves.

Ultimately, I remain positive both about the future of the alliance and about the future of democratic societies. De- >

“Not every disagreement signals a crisis. Not every controversy means the alliance is falling apart.”

Nadia Schadlow

mocracies face serious challenges, but they also retain enormous strengths.

And in the end, what is the alternative?

Listening to you, one could get the impression that your message to Europeans, and perhaps especially to Germans, is quite simple: wake up to reality.

I think that is very well put. Yes, I would largely agree with that interpretation.

One thing I notice repeatedly is that many Europeans are genuinely surprised when they hear alternative American perspectives explained in a calm and reasonable way.

Part of the reason, unfortunately, is the media environment. Coverage is often highly selective. Europeans may read a particular interpretation of an issue and assume that it represents the entire American debate. Then they encounter someone offering a different perspective and suddenly realize that the picture is more complicated. I see this happen again and again in conversations with European friends. They often tell me afterwards: “Well, that is different from what we had understood.”

Can you give an example?

Voting reform in the United States is a good one. Many Europeans view debates about voter identification through a very specific lens. Yet from another perspective, requiring identification to vote is not particularly unusual. Americans need identification for many everyday activities. Whether one agrees or disagrees with particular reforms is not

really the point. The point is that complex issues are too often presented without sufficient context. Media coverage frequently reduces debates to simple moral narratives. As a result, people stop trying to understand why others hold different views. That is a disservice to everyone because context matters. Without context, it becomes very difficult to have serious discussions about difficult issues.

So your appeal is essentially for more context and less emotion?

Exactly. If you look back at the history of NATO, for example, you find intense emotions surrounding many major decisions. There were disagreements, protests, and moments of real tension. Yet the alliance endured because leaders were able to keep those disputes in perspective. That is important to remember today as well. Not every disagreement signals a crisis. Not every controversy means the alliance is falling apart. We should avoid reacting to every conflict as though it were unprecedented.

Despite everything we have discussed, you remain confident in NATO?

Very much so. I view NATO as a tremendous strategic advantage for both Europe and the United States. It is one of the strongest examples of successful cooperation among democracies. In fact, if we think in terms of strategic competition, NATO is an important part of what I would call overmatch. It al-

lows countries with shared interests to combine resources, capabilities, and political will in ways that no individual nation could achieve alone.

What makes NATO particularly valuable is that it is a coalition that actually works. It produces real capabilities and real outcomes. That distinguishes it from some much larger international frameworks, where participation is broad but results can be far more limited. So despite the frustrations, the disagreements, and the periodic crises, I continue to see NATO as one of the great strengths of the democratic world. ■

“China’s Goal Is to Create Dependencies”

For a long time, Europe viewed China primarily as an economic partner and underestimated its strategic ambitions. China expert François Godement explains why economic dependencies become geopolitical leverage – and why Germany is particularly vulnerable.

François Godement, you have argued for years that Europe fundamentally misread China. Looking back, what were the biggest strategic mistakes?

François Godement: Europe was not alone. Much of the international community shared the same assumptions when China joined the WTO. The belief was that economic opening would gradually lead to political opening. As China became wealthier, it was expected to evolve into a more consumer-driven society, with freer markets and, eventually, more liberal politics. Many assumed that free markets would create free minds. None of that happened in the way people expected.

A second mistake was that Europe never really viewed China through a geopolitical lens. China seemed distant. Europeans did not face the same

hard-power realities as the United States, which had to think about Taiwan and military balances in the Pacific. As a result, Europe approached China primarily as an economic partner.

When did Europe begin to realize that its assumptions were wrong?

The first warning signs appeared around 2008. The Beijing Olympics coincided with controversies over Tibet and Sudan. China started responding more assertively when European leaders criticized its policies. Germany faced pressure after Chancellor Merkel met the Dalai Lama. France experienced trade reprisals and anti-French campaigns after President Sarkozy raised Tibet-related issues. At the time, these measures were limited, but they revealed a more coercive side of Chinese policy.



INTERVIEW_ François Godement

François Godement is Senior Fellow and Special Adviser at the French think tank Institut Montaigne. Previously, he directed the Asia and China Programme at the European Council on Foreign Relations (ECFR) and served as an adviser to the French Ministry for Europe and Foreign Affairs. A leading China expert, he founded several of Europe’s foremost Asia-focused research institutes and taught at INALCO and Sciences Po. His most recent books include *Les mots de Xi Jinping* (2021) and *La Chine à nos portes* (2018).

KEY MESSAGES

→ **For a long time, Europe underestimated** the fact that China did not link economic opening to political liberalization.

→ **China’s rise** is driven not only by subsidies, but also by industrial policy, technological ambition, talent development, and speed.

→ **Beijing** deliberately uses economic interdependence to generate strategic leverage.

→ **Germany is under particular pressure**, as China increasingly competes in its core industrial sectors.

→ **Europe’s challenge** lies in its ability to translate shared interests into binding decisions and strategic action.

At the same time, China became more nationalistic and more openly focused on military power. Patriotism and strategic competition gained prominence. The atmosphere changed.

Was there another turning point?

Absolutely. For Europe, 2016 was decisive. The acquisition of Kuka by a Chinese company became a symbol. But it was not just Kuka. Chinese firms were buying advanced technology companies across Europe, particularly in Germany. Europeans began to realize that promises about market reform and reciprocity were not being fulfilled. That was when the EU decided not to grant China market economy status and restarted efforts to create investment screening mechanisms. Europe entered what I would call a period of realist awakening.

You describe China as a “hybrid economy.”

What do you mean by that?

China is neither a classic market economy nor a traditional command economy. It combines market competition with strong state direction. The government encourages rivalry among firms, especially in strategic sectors, but it can also intervene, shut down competition, eliminate losers and promote national champions. That flexibility is one of China's strengths. It can harness market dynamism while still pursuing long-term strategic goals.

Many critics say the EU reacted too slowly.

Is that fair?

Only partly. The European Commission is often blamed, but the reality is more complicated. The EU is not a federal state. It has to balance the interests of many member states, each with its own priorities. Decisions require consensus, compromise and often lengthy negotiations.

I sometimes compared the EU to a diplodocus with twenty-seven brains. That sounds humorous, but it reflects a real institutional challenge. Progress may be slow, yet Europe has gradually built new instruments and strengthened its ability to respond.

2019, the EU described China simultaneously as a partner, competitor and systemic rival. Was that the right framework?

I believe it was. Interestingly, many people today argue that Europe underestimated systemic rivalry. But at the time, several member states wanted to downplay that aspect, and China strongly opposed the term altogether. The framework reflected a reality that was already complex and contradictory. Cooperation existed, competition existed, and systemic differences were becoming increasingly visible.

What changed after 2022?

Europe encountered a new reality. Many economists expected China's trade surplus to shrink as the country became wealthier and more consumption-driven. Instead, the opposite happened. China emerged from the pandemic with extraordinary industrial competitiveness. While Western economies struggled with inflation, China experienced deflation and doubled down on manufacturing strength. This was not accidental. It was the result of decades of industrial planning, investment and support for innovation.

How much of China's success is due to subsidies and state support?

Subsidies matter, but they are not the whole story. China has invested heavily, taken enormous numbers of technological bets and created intense competition among firms. There are winners and losers. Eventually, the state consolidates industries around the strongest

players. What many Europeans still underestimate is the role of talent and execution. China is exceptionally strong at integrating software and hardware, scaling innovations and bringing products rapidly to market. That capability cannot simply be explained by subsidies.

What is Europe's central dilemma today?

Europe faces a China that is more competitive than ever and far less willing to make concessions. For years, European policymakers hoped that dialogue and negotiation would gradually produce greater reciprocity. That expectation has largely disappeared. The challenge now is no longer understanding China. The challenge is adapting Europe's own economic and strategic model to a world in which China has become a leading industrial, technological and geopolitical power.

China's Vice Premier recently called for more economic cooperation with Europe ahead of the G7. What does “cooperation” actually mean from Beijing's perspective?

First of all, it means good words. China is never short on good words. For the past two years, Europe has heard a great deal of positive rhetoric. There was a clear effort to maintain a constructive atmosphere in the relationship.

But cooperation does not mean concessions. When China talks about cooperation, it essentially means continuing the existing economic relationship. China is today one of the world's strongest advocates of free trade. That is hardly surprising when you are running a manufacturing trade surplus of more than two trillion dollars a year and an overall trade surplus exceeding one trillion dollars. Countries with large surpluses tend to like free trade very >

“Economic dependence becomes a form of coercive power.”

François Godement

much. Germany, during its own export boom years, was no different.

So when Beijing talks about win-win co-operation, should Europeans take that literally?

There is an old joke that “win-win” from China’s perspective means “we win twice.” It is humorous, but there is a serious point behind it.

China’s competitiveness gives it leverage. Chinese products are often cheaper and increasingly sophisticated. If I acted purely as a consumer, I know exactly which products I would buy in many sectors. For many goods, switching from European, Japanese or American products to Chinese ones simply makes economic sense.

That is precisely what Xi Jinping has described as a strategic objective: making others more dependent on China than China is dependent on them. Economic dependence becomes a form of coercive power. In certain sectors, China can restrict supply. Meanwhile, democracies find it much harder to restrict demand because consumers naturally want the cheapest and best products available.

Is that also what lies behind Europe’s current crisis of the automotive sector?

Very much so. The automotive industry is a perfect example of this dilemma. European consumers are attracted by increasingly competitive Chinese vehicles, while European manufacturers struggle to match Chinese cost structures and production speed. The tension between industrial policy and consumer

choice is now becoming impossible to ignore.

How do you view tariffs in this context?

For me, tariffs are primarily a signal. They are a way of saying: this trajectory cannot continue indefinitely. Interestingly, the only major economy that has significantly reduced its dependence on Chinese imports is the United States. Whether one likes the policies of Trump or Biden is a separate question. The fact is that successive American administrations have managed to reduce imports from China and diversify supply chains. China understands this perfectly well.

What is striking is that China often refuses concessions to Europe, yet negotiates seriously with the United States when faced with pressure. The Phase One trade agreement signed in early 2020 is a good example. If you read the text, the obligations fall overwhelmingly on the Chinese side. Beijing accepted those terms because maintaining access to the American market was essential.

Are tariffs a sustainable solution?

No. In the long run, tariffs have serious drawbacks. Consumers pay higher prices. Domestic industries become less exposed to competition. Exporters can lose competitiveness in third markets where Chinese products remain available.

Still, targeted tariffs can send an important political message. I supported the EU’s tariffs on Chinese electric vehicles. The Commission conducted a

relatively rigorous investigation and calibrated duties according to the subsidies different companies received.

The problem is that reality moved faster than policy. Chinese manufacturers rapidly cut prices and shifted toward hybrids and conventional vehicles. Europe reacted too slowly. If the goal was genuinely to slow the surge of Chinese automotive exports, much stronger measures would have been required. The larger question is ultimately one of political will.

Why is China reacting so strongly to Europe’s attempts to tighten investment rules and industrial policy?

Because China needs its export engine more than ever. Its domestic economy is sluggish, industrial overcapacity remains enormous, and exports have become a crucial outlet. At the same time, Chinese leaders know they possess a formidable cost advantage. Whether that advantage originally came from subsidies is almost beside the point. The factories exist, the technologies exist, the products exist, and they are highly competitive. The system is working. China is also counting on European consumers. In France, for example, Chinese cars are becoming increasingly visible. First came Japanese brands, then Korean brands, and now Chinese manufacturers are following the same path. Consumers see attractive prices and good technology. That creates a powerful market dynamic.

Would you say that Europe united in responding to this challenge?

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Not really. What we see is competition among member states. Governments are trying to attract Chinese investment and secure jobs, sometimes by offering increasingly generous terms. Hungary has been the most obvious example. The problem is that some of these deals create surprisingly little local value. In several cases, construction materials came from China, parts came from China, and even part of the workforce came from China. Local supply chains barely benefited. In some respects, the Chinese are doing in parts of Europe what Western manufacturers once did in Latin America: assembling products locally while importing most of the value chain.

Are there countries trying to take a different approach?

Spain is an interesting example. The Spanish government is attempting a middle course. It wants Chinese investment, but it is also trying to extract concessions. In some cases, existing factories can be repurposed for new production. A notable example is Stellantis, which has entered joint ventures in Spain to assemble Chinese vehicles. Importantly, Stellantis retained a 51 percent stake. That should really be the European standard. If foreign companies want access to the European market, Europe should negotiate from a position of strength.

What should Europe be demanding?

Ideally, Europe would require local suppliers, local employment, majority European ownership and, above all, technology transfer. Ironically, this is precisely the strategy China used for decades to build its own industrial base. I have argued that Europe should adopt a reverse version of the Chinese model. In several technologies, China has

leapfrogged us. If we want to preserve industrial capabilities, we need to attach conditions to market access. The difficulty is that Europe is not China. We are twenty-seven democracies with different interests. China also understands this game perfectly because it invented it. It is unlikely to hand over cutting-edge technologies voluntarily. That makes technology transfer the most difficult objective to achieve.

How is Beijing responding to the current debate in Brussels?

China is trying to exploit divisions among member states before a common European position emerges. At the same time, it has equipped itself with a wide range of countermeasures. Beijing has adopted legislation allowing it to retaliate against export restrictions or other measures that it believes threaten China's economic security.

What is particularly striking is that China has elevated economic development to the status of a core national interest. Traditionally, China's core interests were issues such as Taiwan and the political system. Under Xi Jinping, there is now a third one: China's right to development.

In practice, that means Beijing increasingly argues that other countries should not place limits on Chinese exports or industrial expansion. China still presents itself as a developing country when it is convenient, even though in many respects it has already become a major developed industrial power.

How important is military power in this broader competition?

For Europe, the challenge is primarily economic and technological, but the military dimension cannot be separated completely. Much of today's competition

revolves around dual-use technologies that strengthen both civilian industries and military capabilities. There is also the question of technology flows to countries such as Russia, Iran or North Korea. China's military modernization is undeniably significant. Its growing nuclear arsenal, long-range missile capabilities and expanding space programs have global implications. Yet for Europe, the most immediate risks are indirect. They involve maritime security, critical infrastructure and communication networks. Concerns about under-sea cables, port access and strategic dependencies are becoming increasingly important. More broadly, the Internet of Things that will be included in all of our appliances is an avenue for cyberattacks or data siphoning, including but not limited to China. A conflict over Taiwan would be catastrophic economically for Europe, even if it is not a direct military participant. That is why the economic and security dimensions can no longer be treated separately. They have become deeply interconnected.

If you had to identify Europe's most important strategic priority today, what would it be?

I actually have two priorities, not one. The first is internal. Europe must become capable of making binding decisions. Debate is normal. Different interests are normal. But at some point, decisions have to be taken and enforced. The worst possible outcome is endless discussion followed by non-binding compromises that allow individual member states to pursue their own agendas. China has exploited exactly those divisions for years, and so have other major powers, including the United States. Take the current debate over industrial policy and investment >

“Europe’s challenge is not simply China’s rise. It is Europe’s ability to act collectively.”

François Godement

screening. I do not know exactly where Europe will land. But wherever it lands, the outcome must be binding. Otherwise, Europe will remain vulnerable to divide-and-rule tactics.

Does that also require institutional reform?

Absolutely. Europe needs a stronger and more capable Commission. It needs to be faster, more efficient and better staffed. In some sectors, especially digital technologies, Europe struggles to attract the expertise it needs. The private sector can pay salaries that public institutions simply cannot match. Yet Europe needs that expertise if it wants to compete. It also requires closer cooperation between governments and industry. Companies will only share sensitive information if they trust public institutions to handle it professionally and confidentially. Countries such as Japan have often been better at building these relationships. Europe still has work to do.

What is the deeper challenge for Europe?

The challenge is political. No member state will ever abandon its national interests, nor should it. But governments must understand that national interests have to be negotiated within a European framework. At some point, compromises have to be accepted. If Europe cannot do that, then it will be extremely difficult to deal effectively with a power like China. We may have twenty-seven countries, but China

negotiates with us as one economic space. If we behave as twenty-seven separate actors, we weaken ourselves.

And your second priority?

Europe must continue building partnerships with other major economies. Japan, South Korea, India and other industrial powers are essential partners. Cooperation with the United States has become more complicated, but it remains important in many areas. The world is becoming increasingly fragmented. In that environment, no country or region can succeed entirely on its own. Europe needs a broader network of economic and strategic relationships.

What happens if Europe fails to achieve this unity?

We already have an example. Look at the reaction to the Trump administration’s trade policies. Europe, Japan and others broadly agreed on the diagnosis. They all wanted to preserve open trade and avoid tariffs. Yet when negotiations began, each country ultimately pursued its own bilateral deal with Washington. The same thing could happen with China. Every country may agree in principle, but when pressure increases, national interests often take precedence over collective action. That is precisely the danger Europe faces.

Why has China not been more successful in winning partners over?

Because China often confuses influence with friendship. If Beijing had consis-

tently pursued compromise and accommodation, particularly in regions such as Southeast Asia, it could have won enormous goodwill. Instead, it tends to seek leverage rather than partnership. It wants others to adapt to Chinese priorities rather than negotiate genuine middle ground. China frequently speaks about friendship and cooperation. But its objective is often different. The goal is not necessarily to create allies. The goal is to create dependencies. And dependency is not the same thing as friendship.

So what is the strategic lesson for Europe?

Europe’s challenge is not simply China’s rise. It is Europe’s ability to act collectively. The key question is whether Europeans can transform a common diagnosis into common action. If they can, Europe remains a major actor. If they cannot, others will continue to exploit Europe’s internal divisions. In the long run, that is the real strategic test.

If you had to summarize China’s grand strategy in a single sentence, what would it be?

To secure the largest possible share of global industrial capacity while ensuring that China remains prosperous and powerful despite its looming demographic decline. China’s population is aging faster than almost anyone expected. The leadership understands this challenge and sees technological and industrial dominance as the answer. ➤

I would not describe China's ambition as wanting to rule the world. That is a common misunderstanding. China is fundamentally focused on itself. Its priority is preserving growth, stability and national power. The outside world matters primarily insofar as it serves those goals.

Can you give an example of that mindset?

Take the recent discussion about China's declining oil imports. Some commentators argued that China was helping stabilize the global economy by reducing demand and easing pressure on energy prices. I think that interpretation misses the point. China is not acting out of benevolence. It is acting out of self-interest. It needs a healthy global economy because it depends on foreign markets for its exports. Maintaining demand abroad is essential for maintaining growth at home. China may sometimes produce outcomes that benefit others, but that does not mean those outcomes were the objective. The objective remains the same: sustaining China's own development and industrial strength.

What should Europe's goal be?

Europe faces a delicate balancing act. On one side, there is the need for economic engagement. We cannot simply decouple from China. China has become too large, too technologically advanced and too deeply integrated into the global economy. We may criticize how it achieved its position, but the reality is that Europe must deal with the China that exists, not the China we would like to see. On the other side lies security. That is where Europe must draw its red lines. The challenge is finding the boundary between necessary economic compromise and unacceptable strategic dependence.

Where do you see the greatest vulnerabilities?

Increasingly in technology. Cybersecurity, artificial intelligence, quantum technologies, advanced software systems, digital infrastructure. These are not abstract issues. They are becoming embedded in everyday life and in critical industrial systems.

Think about modern cars. Think about wind turbines, electricity grids, industrial control systems. The question is no longer whether technology creates dependencies. The question is how much dependency Europe is willing to accept. What worries me most is not a single technology but the cumulative effect. The possibility that Europe gradually becomes dependent on technological ecosystems designed elsewhere. That would not only have economic consequences; it would also affect Europe's strategic autonomy and its capacity to make independent choices.

How do you compare the United States and China in this technological competition?

The United States remains dominant in the digital sphere. It still leads in many of the core technologies that underpin the global digital economy. China's strength is somewhat different. China excels at embedding technology into physical products and industrial systems. It is extraordinarily strong in what we call the Internet of Things. The American lead is primarily digital. The Chinese lead is increasingly industrial and infrastructural. It is built into the products, networks and systems that surround us every day.

We spoke earlier today with an expert on the German automotive industry. He described the mood as one of depression and helplessness. Do you share that assessment?

The challenge facing German industry is very real. I recently came across a striking analysis comparing Chinese export penetration with industrial employment across European regions. If someone had asked me a decade ago which regions were most vulnerable, I probably would have pointed to Southern Europe. That would have been wrong. The areas under the greatest pressure today are Germany and the Central European economies that are deeply integrated into German industrial supply chains. China is increasingly competing directly with the sectors that traditionally formed the backbone of German economic strength. That is why the issue is so consequential. We are no longer talking about competition in peripheral industries. We are talking about competition at the very heart of Europe's industrial model. And when you look at the numbers, the picture is genuinely alarming. Still, I would not end on a pessimistic note. Europe has faced major challenges before. The situation is serious, but it is not hopeless. The question is whether Europeans can act with enough unity and urgency to adapt to a world in which China has become an industrial power on a scale few anticipated. ■

A close-up portrait of Marina Rudyak, a woman with long, wavy, light brown hair, looking directly at the camera with a slight smile. She is wearing a dark blazer. The background is a solid dark grey.

“In the Chinese Worldview, States Are Networks of Relationships”

For sinologist Marina Rudyak, successful China policy begins with strategic empathy: anyone who wants to understand China's actions must first learn to see China as it sees itself – not through Western projections.

Marina Rudyakin your book, you write that China often knows Europe better than Europe knows China. Is this a strategic weakness on Europe's part?

Marina Rudyak: It begins with education. In China, world history is part of the school curriculum, and European history is included within it. In our education systems, by contrast, China still plays only a marginal role. Put simply: when we think about the world, it often seems to end somewhere around Russia. This becomes visible in other areas as well. Chinese politicians and journalists usually know exactly who Europe's heads of state and government are. The reverse is often not true. I frequently encounter a very one-dimensional image of China and the assumption that people there simply follow the government. Interestingly, we approach China differently than we approach the United States. With America, we are able to accept shades of grey. We see problematic developments, but also freedom, democracy, and civic engagement. When it comes to China, we often struggle to do the same. We see the repressive government but frequently overlook the creative and innovative society behind it.

You advocate what you call "strategic empathy."

Yes. Empathy first and foremost means putting oneself in another person's way of thinking and understanding the experiences, ideologies, and motivations that shape their actions. That does not mean approving of those actions. The opposite of empathy is projection. My criticism is that our image of China is often shaped more by our own assumptions than by the way China understands itself.

That is why I argue that we should first

seek to understand how the other side thinks and only then ask what this means for our own position. The strategic element lies in the fact that Europe can effectively defend its own interests and values vis-à-vis China only if it perceives China with the greatest possible degree of informed understanding. We should engage with the real China, not with a China that primarily exists in our minds.

How did your own image of China evolve?

I was born in Moscow and grew up between two cultures. I moved to Germany at the age of eleven and effectively became bilingual. My interest in how cultures understand one another therefore existed long before I began studying China. After completing my studies in Sinology, I lived in China for several years and worked in Beijing for the German Agency for International Cooperation on projects involving economic-policy reform and regional integration. This brought me into close contact with the Chinese state and its bureaucracy. What I learned was that even within ministries and the Communist Party there are people who would genuinely prefer a more liberal political or economic path for China and who try to promote change from within. Yet some of the most revealing conversations were with taxi drivers.

Taxi drivers?

Yes. In a sense, they are the pulse of society. Very often I would first hear expressions of pride in China's rise. Yet these were frequently followed by highly nuanced criticism: rising rents, high living costs, economic concerns. The fact that both can exist simultaneously – pride and criticism – demonstrates the complexity of Chinese society. It reflects the same humanity, >

INTERVIEW_ Marina Rudyak

Dr. Marina Rudyak is a sinologist at Heidelberg University, an author, and a policy adviser. Her research focuses on China's role in the world, its relations with the Global South and Russia, and the contest for international discursive power. She is also Co-Director of the Decoding China Project, which examines how key concepts of international relations are understood differently in China. Her most recent book is *„Dialog mit dem Drachen“ (Dialogue with the Dragon) (2025)*.

KEY MESSAGES

- **Europe often underestimates** how intensively China observes and analyzes Europe, while nuanced understanding of China remains limited on the European side.
- **In China, technological strength** is regarded as a prerequisite for security, prosperity, and sovereignty.
- **Chinese strategic thinking** is strongly oriented toward relationships, adaptability, and continuous learning processes.
- **Successful China policy** begins with strategic empathy: understanding before judging or reacting.
- **Germany and Europe** can learn agility and a willingness to experiment from China.

with all its contradictions, that we find everywhere in the world. Because of the linguistic and cultural distance, however, we often fail to see these nuances.

China's leadership relies heavily on historical experiences. What role does the "Century of Humiliation" play in this context?

The "Century of Humiliation" remains a central component of China's official historical memory. It is constantly referenced in school textbooks, museum exhibitions, and official statements. The Opium Wars in particular, along with the collapse of the traditional Chinese world order, serve as a warning about what happens when a country falls behind technologically and industrially. One of the key lessons drawn from this period is that technological progress is the precondition for national strength and independence. This idea runs like a red thread through Chinese politics and continues to shape development strategies and Five-Year Plans today. That is why China continues to invest so heavily in innovation, research, and technological self-sufficiency.

This perspective is not confined to official policy; it is also deeply embedded in public consciousness. I remember a conversation with a young party official in Shenzhen. He explained China's enthusiasm for technology through a historical anecdote: while Britain was building gunboats in the nineteenth century, Empress Dowager Cixi had a stone boat constructed in the Summer Palace. "You know how that story ended," he said. The message was unmistakable: those who want to survive need technology.

Against this backdrop, what does Xi Jinping's vision of the "great rejuvenation of the Chinese nation" mean?

At its core lies the idea of regaining the position that China believes it held before the Opium Wars. Traditionally, China saw itself as the "Middle Kingdom," the center of the world. The goal is therefore less about expansion than about overcoming what is perceived as a period of historical backwardness and returning to a status that China believes it rightfully deserves.

In the West, China is often described as a systemic rival or even an adversary. How is this perceived in China?

Officially, China rejects this characterization, especially in relation to Europe. At the same time, the Chinese leadership formulates systemic rivalry in its own way. Within internal party discourse, liberal democracy, the rule of law, and universal values are explicitly described as potential threats to China's stability. The objective is to repel influences that might alter the existing political system.

How democratic is China today?

Hardly democratic – but the way this issue is discussed has changed. Under Hu Jintao, one often heard the argument that China was simply too large for Western-style democracy. Under Xi Jinping, the narrative has shifted. China is now presented as a democracy as well – just a different kind of democracy: a "process-oriented democracy," supposedly more effective because the Communist Party represents the interests of the population. China therefore presents itself as a better-functioning alternative to the West. When Western observers describe China as an authoritarian state or a dictatorship, the government rejects these labels vigorously. Yet according to its own constitution, China is a "people's democratic dictatorship."

"China's goal is returning to a status that it believes it rightfully deserves."

Marina Rudyak

How would you interpret China's current pursuit of technological and economic strength in light of classical Chinese strategic thinking?

The principle inherited from Deng Xiaoping of concealing one's capabilities and biding one's time (taoguang yanghui) served for many years as a central guideline of Chinese foreign policy. Xi Jinping has, in a sense, moved on to the next stage. China has hidden its strength long enough and apparently sees little reason to continue doing so. There is also a second aspect that shapes Chinese behavior: the willingness to define a goal without specifying every step required to reach it. Deng Xiaoping described this approach as "crossing the river by feeling for the stones." You know where you want to go, but not necessarily how you will get there. The important thing is to begin moving. This requires a high tolerance for risk and a willingness to learn from mistakes.

A further important element is relational thinking. In the Chinese worldview, states and societies are understood less as collections of individual actors and more as networks of relationships. Attention is focused on the system itself and on the interactions within that system. >

How do you interpret what happens during meetings between Xi Jinping and Donald Trump?

What strikes me most is the extraordinary degree of preparation on the Chinese side. Chinese officials analyze very carefully what type of personality they are dealing with and what forms of presentation, symbolism, or staging are most likely to produce the desired results. During Trump's visit, considerable emphasis was placed on military honors and symbolic displays because rituals and symbolic communication can generate political effects. In addition, the substantive preparation is exceptionally thorough. Chinese negotiators generally possess decades of political experience and are often trained in technical or scientific fields.

The asymmetry in preparation and the differing levels of clarity regarding strategic objectives became particularly visible during recent negotiations. The American side often celebrated the outcomes as major successes, even though the Chinese commitments frequently amounted to little more than an agreement to continue the dialogue.

How do you assess the relationship between China and Russia?

In Germany, Russia is often portrayed as China's junior partner. Yet I rarely encountered this view in China. From a Chinese perspective, Russia is first and foremost a neighbor with whom China shares more than 4,000 kilometers of border. Russia's stability is therefore highly significant for China's own security. The relationship is historically burdened. There have been border conflicts, decades of tension, and periods without functioning diplomatic relations. For China, stability is therefore the primary concern. At the same

time, China pursues its own interests in Central Asia, particularly in the fields of energy and security. The apparent objective is to keep Russia stable, but not excessively strong. Chinese experts often remark that the numerous meetings between Xi Jinping and Vladimir Putin are less a sign of exceptional closeness than evidence that the relationship requires constant management.

Is this also visible in the war in Ukraine?

Yes. China derives certain economic benefits from the situation, while simultaneously avoiding the kind of support that would enable a decisive Russian victory. Ultimately, Russia is not the central concern – China itself is. Chinese policy is guided above all by China's own strategic interests and by the objective of preserving a stable regional environment conducive to its continued development.

Let us return to the importance of relationships in Chinese thinking. Is "relationality" an integral part of the Chinese understanding of power?

Yes, absolutely. The Chinese social constructivist Qin Yaqing explicitly defines power as relational power. According to this perspective, the source of power lies not primarily in resources or institutions but in stable relationships. This differs significantly from the way we tend to think in the West. We often regard relationships as instruments for achieving a particular goal. In Chinese political thought, the relationship itself is already a goal. Interests may change; a durable relationship endures and can subsequently be used to pursue different interests.

Does a "durable relationship" therefore also imply agility and resilience?

Yes. The concept of relationality has

"The concept of relationality has deep Confucian roots."

Marina Rudyak

deep Confucian roots. Relationships emerge and are stabilized through a continuous cycle of giving and reciprocating. In Chinese, this is referred to as *renqing*, which can be translated roughly as "human feeling" or "human connectedness."

As long as this cycle continues to function, the relationship remains intact. If the cycle is interrupted, this can almost be interpreted as the end of the relationship itself. That is why it is insufficient, for example, to describe China's engagement in Africa merely as a one-sided relationship of dependency. If China wishes to maintain political influence there, it must sustain exchange and reciprocity over time. In this sense, stability is indeed generated through constant adaptation: by asking what the other side needs and by keeping alive the cycle of mutual obligations and reciprocity.

Do we need a different way of thinking in order to engage successfully with China?

I do not believe that we need to fundamentally relearn how to think. Relationships are often our most durable resource as well. Politics and business in Europe also operate through networks, trust, and personal relationships. Our theoretical models frequently treat people as rational actors, almost like machines. We often behave as though only rational structures and institu- ➤

tions matter. I regard this separation as artificial. For that reason, dealing effectively with China may require less a new way of thinking than a greater willingness to acknowledge the importance of trust, rituals, and interpersonal relationships.

Does Western individualism stand in our way as a cultural obstacle?

I do not think individualism is the real issue. Even in highly individualistic societies, trust plays a central role. One can observe this after every election, when ministers fill key positions with people they trust. This demonstrates that personal relationships remain decisive in our societies as well. The difference is that our societies are more heavily institutionalized and governed by formal rules. As a result, we are less dependent on personal trust networks than societies in which formal institutions have historically played a smaller role.

How can we improve communication with China?

This is where strategic empathy becomes important. It helps us understand the dialectical logic through which Chinese politics operates and allows us to frame our own messages in ways that are more likely to resonate. For example, Europe should clearly state that support enabling Russia to wage war in Ukraine affects our core interests. Then we should ask why – and explain our own why as well. And finally, tone always matters.

What can Germany and Europe learn from China?

Above all, agility and a willingness to experiment. We have reached a point where we can increasingly no longer afford slowness. Of course, there are advantages to careful planning. But we have lost something that once made Germany particularly strong: the courage to tinker, experiment, and try things out. That is precisely one of China's great strengths today. The real danger for Europe, in my view, is that we think too much in terms of risks and too little in terms of opportunities. Nineteenth-century China fell into what might be called a "high-level stagnation trap." It had extracted almost everything possible from its existing model and thereby lost the incentive to renew itself. When the Industrial Revolution arrived, it was overtaken.

The question is whether Europe is now entering a similar situation. While China is making enormous advances in digitalization and technology, many parts of Europe are still struggling with analogue processes. For that reason, my greatest wish is a return to experimentation. My former professor Rudolf Wagner once said: "Anything that is not a construction site quickly becomes a cemetery." There is a great deal of truth in that. ■

“The courage to tinker, experiment and try things out is one of China’s greatest strengths today.”

Marina Rudyak

“Europe Is a Continent of Emigration”

The West is not in decline, believes economist Branko Milanović. Yet Europe must accept that its global weight is diminishing. In his view, the greatest strategic challenges lie not in China, but in demography, innovation, and integration.

Branko Milanović If you were advising European policymakers today, what would be the most important strategic questions they should be asking themselves?

Branko Milanović: How to increase growth under the conditions of declining population, increasing desire to work less, conscious decision to cut cheap energy supplies from Russia, and impossibility to import people in order to solve negative population trends. It seems to me that relaunching growth – expecting rates of growth of at least 2 percent per annum – requires being much more open to new technologies and more innovative. On the face of it, the EU has two advantages: highly educated population, and attraction as a place of residence (more on that below)

which in turn might attract the brightest minds from the rest of the world.

Europe increasingly finds itself between an assertive China and a more transactional United States. Is strategic autonomy a realistic ambition or an illusion Europeans tell themselves?

While I believe that the relationship between the United States and Europe will not, in the foreseeable future, go back to the situation that characterized it after the Cold War, or for Western Europe since 1945 (during both of these episodes Europe played a role of a faithful ally and generally followed America in most of its international adventures), I think that one should not take the current, rather bizarre, state of affairs as the new normal. But, I do agree with >



INTERVIEW_ **Branko Milanović**

Branko Milanović is a Serbian-American economist best known for his work on global income inequality and economic development. He spent two decades at the World Bank, including as Lead Economist in its research department, and is widely regarded as one of the most influential scholars of inequality today. His most recent book is *The Great Global Transformation* (2025).

KEY MESSAGES

- **Europe's future** will be determined by its ability to generate economic growth.
- **The loss of economic and technological importance** is occurring gradually rather than through a sudden collapse.
- **Transatlantic relations** are becoming more distant, while pragmatic cooperation with China remains possible in many areas.
- **Quality of life** is a significant competitive advantage in the global race for talent.
- **The greatest political challenge** remains the successful combination of immigration and societal integration.

your implicit assumption that the closeness between the political US and the political EU will not be the same, at the very least because of the “Trump shock”, and accordingly the realization that there are strong forces in the United States that are more concerned with the American role in the Pacific than in Europe. Perhaps one should also reflect on the fact that the US got embroiled in the European conflict only in 1917, that is, rather late, and to a large extent, reluctantly, and with lots of resistance from the then political establishment. And that in the Second World War, US’s main theater of operation was in the Pacific, not in the Atlantic. And finally, that the American anti-Soviet stance, that buttressed the cooperation between Western Europe and America, was an American self-preservation mechanism, as the US was fearful of Communist influence at home and abroad. Thus, a more autonomous Europe (with respect to the US) seems to me quite realistic. Not because Europe wished it, but America’s priorities shifted.

When it comes to China, I have difficulties seeing where in the political sense Europe has a difference of interest with China. Economically, indeed, there is a “China effect”: working-class parts of the European populations have slid downward in the global income rankings as they are overtaken by the rising (income-wise) segments of the population of new Asian economic giants, and notably by the Chinese. But politically it does not seem that Europe has contentious issues with China. What one observes on the EU side are rather the residuals of the ideology of the 1990s when the US and Europe felt (or convinced themselves that they felt) the

need to deliver lessons of democracy to the rest of the world. That time has revolved, and once European politicians accept that fact, Europe’s relations with China immediately appear under a much more benign light, such that close cooperation on issues like climate change, trade rules, respect of the UN charter etc. can be readily envisaged.

You describe Europe as a comfortable place to live but a continent in relative decline. Is Europe’s challenge primarily economic, technological, demographic, or psychological?

I think that the decline is economic (which can be seen in numbers) and technological (which I think can also be assessed empirically). It is important to note that these are relative, not absolute declines. However, for a continent that has since Vasco de Gama’s expedi-

tioned, many of these negative trends are true, but they are true in historical time, that is over a long haul. Thus the decline is real, but catastrophism, I think, is not a l’ordre du jour.

Europe often worries about its lack of scale, technological champions, or military power. Yet its combination of prosperity, stability, rule of law, and quality of life remains difficult to replicate. Could Europe’s greatest strategic asset in the coming decades be not its economic strength but its attractiveness as a place where talented people want to build their lives?

Europe is, I believe undoubtedly, the most attractive place in the world to live because of its cultural heterogeneity, high standard of living, very good transportation, affordable health care and education, long and varied history and, certainly in the Mediterranean

“We have been used, since Oswald Spengler, to revel in the talks of Western decline. It always got postponed.”

Branko Milanović

tions and until 1945 – and even after that, through its extensive collaboration with the United States – dominated, and at times dictated, to the rest of the world, the reckoning with a new lower position may be traumatic. This I think feeds the language of “declinism” in Europe. The narrative of “declinism” may be somewhat exaggerated: we have been used, since Oswald Spengler, to revel in the talks of Western decline. It always got postponed. As I men-

region, one of the most pleasant climates in the world. It could be a big asset for innovation and technological renaissance. But it does face the issue to which I will turn next: immigration. Although Europe is, of course, generally welcoming to very educated foreigners from Asia or Africa (so much so that some big cities in Europe have a third of its population foreign-born, although many are just simply from other EU countries), Europe is a continent >

whose entire history is one of outside projection of people and power, namely of spreading to the rest of the world: from the Great Explorations to Napoleonic times and even later. It is thus a continent of emigration. People immigrating into Europe are, unlike for the US, a new phenomenon. The immigrants into Europe were historically peoples who simply invaded those who lived in various parts of Europe. We speak of Gothic and Sarmatian invasions, of Arabic and later Ottoman. Most of the invaders (with the exceptions of the Arabs) eventually stayed in Europe and became mixed with its indigenous population. But these were different “immigrants”. Economic immigration – people coming one by one in search of higher incomes – is historically a novel phenomenon for Europe. This is why I think that Europe, despite all the advantages that I noted above, will not, in a foreseeable future, be able to replicate, in that area, the United States or even Canada, whose histories are entirely different.

Looking at Europe today, what is the one uncomfortable truth that European leaders understand privately but are still reluctant to say publicly?

I would say, Immigration. Political elites are understandably unwilling to mention it although they are quietly changing policies. For example, the most welcoming countries of the 1960s-1990s were Nordic countries; but they are now at the forefront of limiting or stopping immigration altogether. They even try to reverse it by paying people to leave. Generally, social integration of immigrants leaves much to be desired in those countries. The same sentiment is shared by many other countries in Europe. The right-wing parties, indeed,

make a political capital of it. I would however distinguish however open anti-immigrant feelings or even hatred which I think is not prevalent; tolerance or indifference which I think is fairly widespread; and ability to effectively socially integrate foreign-born population which I think is rather uncommon in most places in Europe. Thus, active enmity is rare, but so is seamless integration.

You have spent much of your career studying the rise and decline of economic systems. If current trends continue, where do you see Europe in 2050: as an influential pole in a multipolar world, as a prosperous but geopolitically secondary region, or as something else entirely?

Prosperous; economically even more integrated than now, but not necessarily so politically; and geopolitically of lower importance than now and certainly than in the past. ■

“People immigrating into Europe are, unlike for the US, a new phenomenon.”

Branko Milanović

“Deterrence Is Usually Much Cheaper”

Anyone seeking to understand world politics should focus less on borders and more on bottlenecks. U.S. geoeconomics expert Edward Fishman explains how states exert influence through financial systems, technologies, and supply chains – and why the key power struggles of the twenty-first century are increasingly economic in nature.

Edward Fishman, using the Strait of Hormuz as an example, what makes a chokepoint strategically relevant, and how can policymakers identify new ones?

Edward Fishman, the term chokepoint is used a lot today, which I welcome. But we need a more disciplined definition. Otherwise, policymakers risk treating every dependency as a strategic vulnerability and end up making poor decisions. A true chokepoint has three characteristics. First, a country or a coalition of allies controls a dominant share of a market. Second, the good or service involved is very difficult to substitute in the short term. Third, and most importantly, the controlling actor must be able to weaponize that position with asymmetric effect. In other words, cutting off access must hurt the target

much more than it hurts the country wielding the leverage. The Strait of Hormuz illustrates this perfectly. Roughly 20 percent of global oil exports passed through the strait before the current conflict. There is no meaningful alternative route. Pipelines can help, but building enough capacity would take years. What surprised many observers was Iran’s ability to exploit this vulnerability without physically closing the strait. The assumption in Washington had long been that Iran would need to lay sea mines, which would have harmed its own exports as much as everyone else’s. Instead, Iran used relatively inexpensive drones and missiles against a limited number of vessels. That was enough to change the risk calculations of the shipping industry. Tankers stayed away, >



INTERVIEW_ Edward Fishman

Edward Fishman is Senior Fellow and Director of the Maurice R. Greenberg Center for Geoeconomics at the Council on Foreign Relations (CFR) in New York. As one of the leading experts on geoeconomics, Fishman brings together experience from government, the technology sector, media, and academia. His New York Times bestseller “Chokepoints: American Power in the Age of Economic Warfare” was named one of the best books of 2025 by The Economist, the Financial Times, and Bloomberg.

KEY MESSAGES

- **Geopolitical competition** is increasingly shifting from military to economic instruments.
- **Strategic chokepoints** often emerge through innovation and market forces rather than state planning.
- **Competition** over AI computing power is becoming a critical arena of strategic rivalry.
- **Europe’s technological sovereignty** should be built on innovation rather than mere duplication.
- **Trust among democracies** remains a decisive strategic asset despite geopolitical tensions.

prices surged above 100 dollars per barrel, and Iran continued selling its own oil. That is a textbook example of asymmetric leverage.

What does this tell us about the way power is exercised today?

It tells us that warfare is changing. We already saw this in Ukraine, where a smaller country has been able to challenge a much larger adversary by producing low cost drones at scale. Iran has shown that the same logic can be applied to maritime chokepoints. You no longer need absolute control. Sometimes you only need the ability to alter incentives and perceptions. A handful of attacks can reshape the behavior of shipping companies, insurers, and traders. That creates leverage at remarkably low cost. I would not be surprised if other countries study this example closely. We have already seen debates around the Strait of Malacca and other strategic waterways. If Iran ultimately manages to profit from its position, others may try to follow a similar playbook.

Your concept extends far beyond geography. How do economic chokepoints differ from traditional ones?

Geographic chokepoints have existed for centuries. Ancient Athens depended on access to the Bosphorus and the Dardanelles for grain supplies. Maritime routes have always been sources of power. What is new is the emergence of economic chokepoints. After the Cold War, globalization created highly integrated financial systems and supply chains. For the first time in history, most of the world revolved around a single financial architecture centered on the dollar. That produced new forms of leverage. The dollar based payment system is a chokepoint. Rare earth

elements refined in China are a chokepoint. Advanced AI chips designed in the United States, built with Dutch technology and manufactured in Taiwan are another. These chokepoints are often more powerful than geographic ones because they can be weaponized without military force. The United States does not need warships to cut a company off from the dollar system. A presidential signature is enough. The same is true when China restricts access to rare earths. Economic power can now generate strategic effects that once required armies and fleets.

Has the rise of economic chokepoints fundamentally changed international politics?

I think it has. A useful comparison is the arrival of air power. Before aircraft, if you wanted to strike an enemy city, you had to send soldiers. Air power created the possibility, or at least the promise, of imposing costs without suffering them yourself. Economic chokepoints create a similar temptation. They offer the prospect of coercion without military conflict.

I saw this firsthand while working on sanctions against Iran. From offices in Washington, civilian officials were able to reduce Iran's oil exports by around 60 percent within a year and lock away tens of billions of dollars in Iranian oil revenues overseas. That pressure ultimately helped bring Iran to the negotiating table over its nuclear program. When you step back, it is remarkable. Governments can now use regulations, financial infrastructure and supply chains to impose strategic pressure that once would have required military force. That is why economic warfare has become such a central feature of geopolitics. We are witness-

ing a fundamentally new way of exercising power, and I do not think we have fully grasped its implications yet.

Would you go so far as to say that the history of great power competition is increasingly becoming a history of competition over chokepoints?

Yes, I think so. Countries generally do not want to fight wars if they can avoid them. Wars are enormously costly, and in a world where major powers possess nuclear weapons, the risks are obvious. What chokepoints have done is create a space for intense geopolitical competition below the threshold of military conflict. Economic warfare has become the primary arena in which states compete, and economic warfare is ultimately about controlling, exploiting, and weaponizing chokepoints.

That is why I believe chokepoints sit at the center of geopolitics today. In fact, I would argue that it is becoming impossible to understand strategy without understanding chokepoints.

What is often overlooked is that this logic extends beyond governments. Chokepoints are created in markets. They emerge through innovation, business decisions, and competition. Understanding how they form is therefore just as important for business leaders as it is for policymakers.

Can you give an example of a business innovation that became a chokepoint?

Nvidia is probably the clearest example today. The company originally developed graphics processing units for video games. Over time, it turned out that these chips were exceptionally well suited for training artificial intelligence models. What began as a commercial innovation evolved into something strategically significant.

Today Nvidia controls more than 85 >

percent of the market for advanced AI chips. That is why the company is worth trillions of dollars. It has created a chokepoint. For the United States, this has become a major source of leverage. A large part of the current technology competition between Washington and Beijing revolves around determining which chips China can access and which it cannot. The American lead in artificial intelligence is not simply a question of better scientists or greater energy resources. In many respects it comes down to computing power. Nvidia's chips have become the foundation on which companies such as OpenAI and Anthropic build their models. That makes them strategically important. If China were to gain unrestricted access to these technologies, the balance of power in AI could look very different.

Does a chokepoint depend on the ability to exclude others from access? And does that mean you need a monopoly?

Exclusion is certainly part of it. But a formal monopoly is not strictly necessary. The closer you are to a monopoly, however, the more powerful the chokepoint becomes. If we look at the most successful examples, the pattern is clear. The dollar is involved in roughly 90 percent of foreign exchange transactions. Nvidia dominates advanced AI chips. China refines around 90 percent of the world's rare earths. In each case, the actor controlling the chokepoint holds an overwhelming share of the relevant market.

What is important to remember is that governments cannot simply decide to create a chokepoint. They often emerge organically through technological innovation, network effects, and market dynamics. Sometimes it is only after a chokepoint has been used that we fully

recognize its strategic significance.

Which chokepoints will matter most over the next ten or twenty years?

This is one of the most important questions. Many people assume that once a chokepoint is weaponized, countries will reduce their dependence and the problem will disappear. There is some truth to that. China's dependence on the dollar is likely to be lower twenty years from now than it is today. The United States and Europe are already investing heavily to reduce their reliance on Chinese rare earths.

But new chokepoints will emerge. One area I am watching very closely is clean energy. The war with Iran has once again reminded governments of their vulnerability to oil and gas disruptions. As a result, countries are likely to accelerate investment in electric vehicles, batteries, solar panels, wind turbines, and other renewable technologies. The challenge is that China already controls between 70 and 90 percent of many of these supply chains. If the global economy becomes increasingly dependent on clean energy technologies, China will gain a tremendous amount of geoeconomic leverage. Europe, in particular, could become highly exposed because it lacks the energy resources that the United States still possesses. If current trends continue, I believe China's influence in this area will grow significantly.

What is the role of AI in economic warfare?

AI may become the most consequential chokepoint of all. The key question is whether AI evolves into a winner takes all market. If a small number of companies achieve artificial general intelligence and remain far ahead of everyone else, businesses around the world may

have no choice but to rely on their systems.

Imagine a future in which companies in Munich, Tokyo, Cape Town, or even Beijing cannot remain competitive unless they subscribe to a handful of American AI models. The leverage that would create for the United States would be extraordinary. Potentially even greater than the leverage the dollar provides today.

Of course, the opposite outcome is also possible. AI could become commoditized. Open source models could become just as capable as the leading systems. In that world, AI would not become a chokepoint. But if the enormous valuations of companies such as OpenAI and Anthropic are any indication, many investors are betting that AI will remain concentrated rather than commoditized. If they are right, AI could become one of the defining chokepoints of the twenty first century.

In this age of economic warfare, which European strengths are most underestimated? Does Europe possess chokepoints of its own?

I think Europe has far more power than many Europeans realize. Whenever I travel across Europe, I encounter a certain pessimism. People feel squeezed between Washington and Beijing. First China was applying pressure, now the United States is doing the same. There is a sense that Europe is caught in the middle. I understand that feeling. The geopolitical environment is not exactly comforting at the moment. But we should not forget that the European Union is one of the largest economic blocs in the world. Collectively, it is a great power. It has substantial leverage, not only over smaller countries but also over both the United

“The challenge is that China already controls between 70 and 90 percent of many of these supply chains. If the global economy becomes increasingly dependent on clean energy technologies, China will gain a tremendous amount of geoeconomic leverage. Europe, in particular, could become highly exposed because it lacks the energy resources that the United States still possesses.”

States and China. There are obvious examples. One is ASML in the Netherlands. Advanced artificial intelligence depends on cutting edge semiconductors. Those chips rely on several critical chokepoints. Nvidia designs them. TSMC manufactures them. And ASML produces the lithography machines without which the most advanced chips simply cannot be made. That gives Europe a strategically important position in one of the most consequential industries of our time.

What about the euro? Could it become a geopolitical counterweight to the dollar?

The euro is not a chokepoint today. But I do think European leaders are trying to reduce their vulnerability to American financial power. That is one reason why Christine Lagarde and the European Central Bank are pushing for a digital euro. The broader ambition is to make the euro a more attractive alternative to the dollar. And there is no fundamental reason why Europe could not achieve that. The question is not capability. The question is political will. Europe's challenge has never been a lack of resources. The challenge is whether Europeans are prepared to act collectively and consistently. If Europe chooses to do so, it has the economic scale and institutional capacity to play a much larger role in the global financial system. Whether it will do so is ultimately a political question rather than an economic one.

Many Europeans argue that the answer is technological sovereignty. Europe should build its own cloud infrastructure, its own digital platforms, perhaps even alternatives to American software. Do you agree?

Not entirely. If I were European, I would be cautious about spending enormous amounts of money duplicating technolo-

gies that already exist and work extremely well. When countries pursue economic security, they essentially have two options. The first is duplication. You build your own version of everything. The second is deterrence. You develop enough leverage that others think twice before coercing you in the first place. Deterrence is usually much cheaper. Europe actually has the economic weight to make deterrence credible. American technology companies derive roughly a quarter of their revenues from European markets. European investors own nearly ten trillion dollars worth of American stocks and bonds. That is real leverage. Think about what would happen if Europe seriously threatened the revenues of major American technology firms. The consequences for US stock markets would be enormous. We already saw a glimpse of this earlier in the year when President Trump floated aggressive moves regarding Greenland. European discussions about possible countermeasures immediately unsettled financial markets, and Washington quickly toned down the rhetoric. For Europe, the smarter strategy is not necessarily to recreate every technology stack from scratch. It is to ensure that others understand there will be consequences if Europe is targeted economically. That is how deterrence works.

Does that mean Europe should abandon the idea of technological sovereignty altogether?

No. Europe absolutely should invest in innovation and frontier technologies. It should strive to become a leader in emerging industries. And it should build capabilities where it can create future sources of competitive advantage. What I question is the idea that Europe

should spend vast resources reproducing mature technologies simply because they originate elsewhere.

If policymakers devote their energy to creating alternatives to every existing American product or service, those resources are no longer available for genuine innovation. The goal should be to create the next generation of technologies, not merely to replicate the current one.

Some critics argue that Europe is still thinking in terms of globalization while others have already embraced economic warfare. Is that a fair assessment?

I would not put it that way. Europe was certainly slower than the United States or China to embrace geoeconomic competition. But I do not think European leaders are naïve anymore. In fact, one of the most significant acts of economic statecraft in recent years came from Europe itself. After Russia's invasion of Ukraine, European governments froze Russian central bank reserves, many of which were held in Belgium. That was a bold and consequential move. Europe has also been remarkably creative in finding ways to use those frozen assets to support Ukraine through loans and financial assistance. So I would not say Europe is behind the curve. Europeans understand the realities of economic warfare. The challenge now is not awareness. The challenge is whether Europe can translate its considerable economic weight into a coherent and sustained strategy.

One of the central arguments in your work is that we cannot simultaneously have economic interdependence, economic security, and great power competition. Is that correct?

Yes. I call it the geoeconomic impossible trinity. The basic idea is that you can >

have any two of those three conditions, but not all three at the same time.

During the Cold War, for example, the United States and the Soviet Union were engaged in intense geopolitical competition. But there was very little economic interdependence. As a result, both sides enjoyed a degree of economic security. Neither worried much about being sanctioned by the other because neither depended on the other.

After the Cold War, the picture changed completely. The West increasingly viewed China and Russia as potential partners rather than rivals. Since geopolitical competition seemed to have faded, countries felt comfortable embracing deep economic integration. The United States sourced critical technologies and supply chain inputs from China. China accumulated more than a trillion dollars in US Treasury securities. Nobody worried much about weaponization. Today, geopolitical competition has returned with full force, but economic interdependence remains. Trade flows are still enormous. Financial ties remain deep. The result is that countries no longer feel economically secure.

You see this everywhere. Republicans and Democrats in Washington agree on the need for economic security. Europe has developed an economic security strategy. Japan has a minister responsible for economic security. China is doubling down on self sufficiency. Russia is doing the same. What we are witnessing is a global scramble for economic security. Countries are trying to redesign the economic system to fit a new geopolitical reality.

Have you thought about how this age of economic warfare might eventually come to an end?

I think there are two broad possibilities. The optimistic scenario is that we consciously build a new economic order. If we were designing the global economy from scratch today, we would probably not create the same dependencies that emerged during the era of hyperglobalization.

As an American, I do not think it makes sense to depend on China for pharmaceuticals. I do not think it makes sense to depend on China for rare earths that are essential for automobiles and missile systems. By the same logic, Europe's dependence on Russian energy was clearly problematic.

What I would like to see is a large community of trusted allies that remains economically integrated while gradually reducing strategic dependencies on geopolitical rivals. I am perfectly comfortable relying on Germany, Canada, or other close partners for critical goods. That kind of allied interdependence can actually enhance both prosperity and security. The alternative is much darker. Countries could retreat into an every nation for itself mentality. Governments would increasingly rely on tariffs, sanctions, export controls, and industrial policy without any broader vision. Economic security would become synonymous with complete self reliance. That path leads toward fragmentation and, potentially, toward conflict. History suggests that when countries no longer trust open trade to secure vital resources, they become more tempted by territorial expansion and coercion. If states believe they must directly control resources to feel secure, conquest starts looking attractive again. That is why creating a coherent economic order is so important. The alternative could be a far more dangerous world.

In such a world, does trust still have a place?

I think it does. At the political level, trust has clearly been damaged. If you are sitting in Berlin, Ottawa, or Mexico City, it is understandable that recent American policies have raised questions. The Trump administration imposed tariffs on allies and challenged relationships that many people assumed were permanent. But political trust and societal trust are not the same thing. At the level of ordinary people, I think the foundations of trust remain remarkably strong. Americans do not view Europeans as enemies. They do not view Canadians as enemies. Public opinion often looks very different from political rhetoric. That does not mean trust can be restored overnight. If the United States continues down a confrontational path toward allies for many years, rebuilding confidence will become harder. But I do not believe the damage is irreversible. Democracies change. Leaders change. Policies change. If future governments pursue a more cooperative approach, trust can return, even if it takes time.

Listening to you, one gets the impression that individuals still matter, even amid all these huge structural transformations.

Absolutely. One of the things I have learned from working on geoeconomics for almost two decades is that governments have less control than people often assume. Governments set rules and create incentives, but they do not directly run economies. Businesses make decisions. Investors make decisions. Entrepreneurs innovate. Individuals shape the behavior of institutions. That is especially obvious in economic statecraft. Governments can impose sanctions or export controls, but

companies decide how to respond. Sometimes they follow the spirit of the policy. Sometimes they find work-arounds. Sometimes they move in entirely different directions. So while governments are important, they are not the whole story. Businesses matter. Citizens matter. Personal relationships matter.

In the end, economic systems, governments, and alliances are all made up of people. That is why I remain more optimistic than some observers. When I travel through Europe, I often encounter deep anxiety about what is happening in the United States. Yet everyday life in places like New York still feels remarkably normal. Political headlines can make the world seem darker than it really is. Beneath the turbulence, many of the human connections that underpin trust and cooperation are still there.

And that gives me reason for hope. ■

„In the end, economic systems, governments, and alliances are all made up of people.“

Edward Fishman

“Even the Most Powerful Countries Need Cooperation”

Interests and values cannot be separated, argues Italian political scientist Nathalie Tocci. For her, strategic autonomy means neither power politics nor isolation, but Europe’s ability to safeguard its own security, prosperity, and democracy in an increasingly uncertain world.

Nathalie Tocci, how would you define genuine European strategic autonomy today – and why does the debate still suffer from confusion?

Nathalie Tocci: I would define it the way I always did: as the ability for Europe to act together with others when it can and alone when it must, in order to protect and promote its interests and values. The European Union’s identity fundamentally revolves around working together – internally within the EU and externally through multilateralism. If the US does not want to act with Europe on issues essential to European interests and values, then Europeans should put themselves in a position to act alone. The US might not necessarily come to Europe’s rescue if Europe were

threatened by Russia. The concept of strategic autonomy has become less controversial because it has become more real. When something is only theoretical, debates become abstract and ideological. Once action begins, the discussion becomes far less controversial. There is now a growing European autonomization underway.

Do you think Europe is moving from a rule-based power to a genuinely geopolitical actor?

No – and I do not think it should. If by “geopolitical actor” we mean an actor driven by a crude understanding of interests rooted in geography, territorial thinking and power politics, then no. Europe is becoming more equipped to protect its interests. But interests



INTERVIEW_ **Nathalie Tocci**

Nathalie Tocci is a political scientist and expert on European foreign and security policy. She teaches at Johns Hopkins University and Bocconi University. She previously served as Director of the Istituto Affari Internazionali (IAI) and as Special Adviser to EU High Representatives for Foreign Affairs Federica Mogherini and Josep Borrell. In that capacity, she was one of the principal authors of the European Global Strategy. Her research focuses on Europe, geopolitics, security, climate, and international cooperation.

KEY MESSAGES

- **Strategic autonomy** means that Europe acts together with partners whenever possible and independently whenever necessary.
- **European interests** and European values are not opposites. Security, prosperity, and democracy cannot be strategically separated from one another.
- **Europe’s greatest vulnerability** remains defence.
- **The enlargement of the European Union** is a strategic project. Permanent grey zones along Europe’s borders are not a viable option.
- **Europe’s true strength** lies in its capacity for cooperation.

should be defended in ways that remain aligned with norms and international law. I think it is dangerous to believe that protecting norms and protecting interests are opposing goals. In reality, they are two sides of the same coin.

Some would argue that strategy is about survival, not values. How do you respond to that?

I think it is intellectually lazy and analytically wrong to treat interests – including survival – and values as disconnected. Of course survival begins with physical survival. But political communities also seek to survive as political entities defined by certain principles. Those principles can be liberal or illiberal, nationalist or otherwise, but values always shape how interests are understood.

Take Ukraine. Europeans support Ukraine not because they are simply “nice people,” but because defending Ukraine is seen as being in Europe’s interest. Yet if Ukraine were an authoritarian state governed like Russia, Europeans would probably see the situation differently. The way interests are articulated is inseparable from values.

So how exactly do you define “interests” in this context?

Interests are what a political community believes it needs in order to secure the good life collectively. They revolve around three broad areas: security, prosperity and rights – including the nature of the political system itself. How those interests are defined de-

pends on identity and values. China, for example, also considers rights important, but conceives them mainly in socioeconomic rather than civic terms. Everyone has interests, but what goes into the box of those interests depends on who you think you are.

Is European strategic autonomy essentially about – as you’ve put it – “Trump-proofing” Europe?

During Trump’s first presidency, “Trump-proofing” meant preparing for a gradual American disengagement from Europe. Trump did not particularly like Europe and did not see European security as a priority, but there was no clear intention to destroy the European project. It was more a soft exit. Trump II is different. What we see now is not merely a United States with different priorities, but one that actively wants to undermine European integration and NATO.

There is a lot of talk about dependencies – technological, defence-related, digital infrastructure and so on. Strategically speaking, which dependency matters most?

Obviously defence. The urgency comes from the simultaneous pressure of Russia and the uncertainty surrounding the United States. That is why the emphasis is currently there. Still, I think the picture becomes more nuanced once you scratch beneath the surface. Let me use an example. If you looked only at military power, the confrontation between the US and Israel on one side

and Iran on the other should have been completely one-sided. Yet that is not how events unfolded. Iran managed to exploit asymmetric advantages. Iran is heavily sanctioned, regionally isolated and lacks overwhelming capabilities. Yet it still managed, strategically speaking, to withstand both the United States and Israel by weaponizing asymmetries. The same logic may apply to Europe in technology. At the macro level, Europe appears behind. But if one analyses the value chains and the choke points more carefully, one may discover areas of asymmetric European advantage. If Europe preserves those strengths, it may not be as vulnerable as the broader picture suggests.

Has Europe finally abandoned the illusion of partnership with Moscow? And looking ahead: should Europe eventually seek a new modus vivendi with Russia after the war?

“After the war”: I am not convinced we are anywhere near such a situation. My view is that Russia will continue this war as long as Putin remains in power. The continuation of the war has become essential to the survival of his regime. Strategically speaking, Russia is not winning. But that is not a reason for him to stop. Economically, Russia can no longer afford peace because so much of its economy now revolves around war production. Socially and politically, Putin also cannot afford hundreds of thousands of angry soldiers returning home. And ideologically, his world- >

“Interests are what a political community believes it needs in order to secure the good life collectively.”

Nathalie Tocci

view is fundamentally built around empire and imperial greatness. At some point the war will end, by definition. What kind of Russia would emerge afterward is impossible to know. Of course I hope there will eventually be a different Russia with which Europe can rebuild a relationship. But I find it less useful to speculate about scenarios over which we have no influence. The wiser approach is to prepare for the worst – that the war continues.

You argue that Europe must take greater responsibility in its own neighborhood. What would that responsibility actually mean in practice?

In Europe, taking responsibility means first of all a Europe that is able to defend itself against Russia on its own – certainly in conventional terms. So the defence dimension is relatively clear. I also think EU enlargement is a strategic priority. We no longer live in a world in which grey zones can remain outside the European Union while somehow staying stable, secure and democratic. The war in Ukraine has demonstrated what happens when countries are left in that in-between space.

Do you see Ukraine as a future EU member?

Absolutely. Over the last years we have seen ideas such as gradual integration, staged integration, reverse integration, and now even associate membership. All of these concepts are still rather fuzzy. But they all point to the same conclusion: enlargement has to happen,

and therefore Europe needs to find ways to make it happen. When it comes to the Mediterranean, however, the situation is much more difficult. Frankly, I find it hard to imagine what Europe could do that would fundamentally restore its shattered credibility in the region. That does not mean Europe should simply give up. It still makes sense to think about partnerships with North African countries that are not exclusively focused on migration control.

Do you currently see strong political signals in that direction?

No. But I still think it is the right approach. The same applies to Europe's relationship with Israel. Given the war crimes and crimes against humanity that have occurred – and what the International Court of Justice may one day judge as genocide – I believe this should have consequences for Europe's relationship with Israel. Is Europe moving decisively in that direction? Hardly. Very slowly at best.

I am somewhat more optimistic when it comes to Europe's relationship with the Gulf region – and potentially even Iran in a post-war scenario. Europe and the Gulf are actually in a very similar strategic predicament. Both feel betrayed by the United States, both need to invest more in their own security, and both want to diversify partnerships. That creates a genuine mutual attraction which should be explored further.

How comfortable are you with Germany

taking on a stronger – perhaps even leading – role in European integration, especially with regard to Eastern Europe?

My concern is not that Germany is becoming stronger. My concern is that this is not sufficiently happening in a European context. I do not think the current German government – nor the previous ones – have articulated a particularly clear European vision. That is why it is worrying that Germany's massive increase in defence spending, which could make it the world's third-largest military spender by 2030, is not embedded more firmly in a broader European framework.

And this concern becomes even more serious when one considers what could happen if the AfD were ever to come to power. But even if one assumes that scenario never materializes, it is still problematic for Germany alone to spend more on defence than France and the United Kingdom combined.

One could also argue that Germany is internally too weak at the moment to truly fulfil such a leading role.

Yes, certainly. Germany has significant internal political vulnerabilities.

Do you think Europe – and Germany as well – may actually need a kind of reboot of democracy itself?

That is a really good question – and a very difficult one. I tend to think about it through an image. Down below there are all these forces: the economy, society, politics, all kinds of social dynamics. Then above that there are institu- >

“In Europe, taking responsibility means first of all a Europe that is able to defend itself against Russia.”

Nathalie Tocci

tions. And above institutions, policy. My sense is that institutions have become too tight, too narrow – almost like a tube that is no longer wide enough to channel everything happening underneath. As a result, not everything fits through the tube anymore, and political energy spills out in messy ways. Some people would argue that the solution is to enlarge institutions so they can absorb these forces. For example, in Germany one hears arguments about tearing down the “Brandmauer” – the firewall against the far right. I think that is a very dangerous argument. Perhaps because we have already experienced this in Italy, I see very clearly what happens: anti-democratic and illiberal ideas become normalized and institutionalized.

Empirically, all the evidence suggests that when the far right enters government, it does not moderate – it radicalizes further. Simply enlarging institutions in that way is, in my view, the wrong answer.

But how can we channel this political energy without damaging democracy, but instead renewing and strengthening it?

I do not have the answer. But one thing I do notice is the youth protests we have seen in recent years. To me, this suggests that young people are politically engaged, perhaps more than our own generation was at that age. The difference is that they are not politically engaged in traditional ways. They may not vote. They certainly are not joining political parties. So politics needs more imaginative ways of capturing political energy.

How would you situate yourself within the broader tradition of strategic thinking?

I think even the most powerful countries need cooperation. We can see this

very clearly today with the United States under Trump. Why does America increasingly appear weak? Because it is damaging its friendships, alliances and partnerships.

China is also interesting in this regard. Traditionally China has not been particularly good at building friendships and has often been feared more than liked, especially in its own neighborhood. Yet China is now actively trying to build relationships – in Africa and elsewhere – precisely because it sees strategic value in cooperation. So even the most powerful actors can only exercise power with others. If you destroy your ability to cooperate, you ultimately weaken yourself.

And personally – what matters most to you in cooperation with others?

If I had to choose one word, it would be trust. Strong relationships are built over time through trust. And trust is very easy to destroy in a single moment. Once trust is broken, rebuilding it is extremely difficult – sometimes impossible. ■

“Germany Should Embrace a Larger Role in Europe”

Europe needs military capabilities, technological competitiveness, and the political will to defend its interests. Tim Sweijs outlines why middle powers may become some of the most influential actors in the emerging international order.

Tim Sweijs, in a recent article, you argued that middle powers are becoming increasingly important in shaping the international order. Why do you believe that?

Tim Sweijs: Traditionally, international politics has been shaped by great powers: states with the economic strength, military capabilities and political ambition to influence the international system. They can project power far beyond their borders and are willing to use force when necessary. Most major interstate wars, from the past to the present, have involved great powers, whether Russia in Ukraine, the United States in the Middle East or China's increasingly assertive posture toward Taiwan.

Today, the international system is changing. What many Europeans viewed as a liberal international order

is under growing pressure. Core norms are being challenged not only by Russia and China, but increasingly by the United States as well. Most importantly, the principle that states should not threaten or use force against their neighbours is being violated more frequently. This makes middle powers more important. When great powers become more aggressive or retreat from their traditional role, they leave behind both a power vacuum and a normative vacuum. Someone has to help uphold the rules that sustain international order. Otherwise, stronger states act without constraint while weaker states become more vulnerable.

How would you define the term „middle power“?

A middle power is a country with significant economic resources and political >



INTERVIEW_ Tim Sweijs

Dr. Tim Sweijs is Director of Research at the The Hague Centre for Strategic Studies (HCSS). His interdisciplinary work spans strategy, security, technology, and warfare. He has authored numerous studies and books on strategic foresight, deterrence, emerging technologies, international security, alliances, and defence planning, with a particular focus on strategy development for small and medium-sized powers.

KEY MESSAGES

- **As the major powers** become more withdrawn and increasingly unpredictable, the importance of middle powers for the stability of the international order is growing.
- **Strategic autonomy** begins with strategic emancipation: Europe must learn to define its interests, objectives, and priorities independently of other great powers.
- **Europe's capacity to act** rests on three pillars: economic power, military capabilities, and political resolve.
- **Expanding Europe's defence**, technology, and infrastructure capabilities is a prerequisite for credible deterrence and strategic independence.
- **Germany enjoys the trust** of many European partners and should assume a more active role as Europe's leading middle power.

influence, but without the global reach of a great power. Germany is a good example. It possesses considerable economic weight and political influence, yet lacks the ability, and often the willingness, to project power globally.

India and Turkey are no longer content to simply adapt to decisions made elsewhere. They want to protect their prosperity and way of life on their own terms. At the same time, many smaller and medium sized powers are begin-

a broader network of partners.

What would it mean in practice for Europe to think and act as a geopolitical middle power bloc?

First of all, we should acknowledge that deeper political integration is extremely difficult. States are generally reluctant to transfer sovereignty, especially in matters of security and defence. Historically, major transfers of power have usually happened after wars or during severe crises.

Does that mean European integration has clear limits?

At least in the short term, yes. The debate often becomes polarised. On one side, there are those who argue that Europe needs much stronger centralised power. On the other side, there are critics who worry about democratic legitimacy and the loss of national control. These concerns should not be dismissed. The rise of populist movements across Europe reflects genuine political and societal questions that need to be taken seriously. The challenge is therefore not simply to create more Europe, but to find forms of cooperation that strengthen European power while maintaining democratic legitimacy and public support.

What would be the first step if Europe wants to become a more effective geopolitical actor?

The most important shift is not institutional or military. It is cultural and intellectual. Europeans need to stop constantly asking what the Americans would do, how Putin might react, or what Xi Jinping is thinking. The starting point should be much simpler: What are our interests? What are our values? And above all, what are our objectives? We talk a lot about interests and values, but much less about objectives. ➤

“States are generally reluctant to transfer sovereignty.”

Tim Sweijs

What responsibility follows from that position?

Middle powers, together with smaller states, need to step up and help preserve what remains of the international order. They cannot replace the great powers, but they can help defend important norms and institutions. A very concrete example is Ukraine. Europeans have increasingly taken responsibility for supporting Ukraine as American reliability has become more uncertain.

To what extent do you agree with Mark Carney's famous Davos speech and his advice that middle powers should build alliances and cooperate more closely?

I largely agree with his assessment. Even before the return of Trump, it was clear that the international order was under significant pressure and that middle powers would become increasingly important.

What has changed in the role of middle powers?

We are seeing a growing number of states that want to play a larger role internationally. Countries such as South Korea, the UAE, Singapore, Saudi Ara-

bia and Turkey are no longer content to simply adapt to decisions made elsewhere. They want to protect their prosperity and way of life on their own terms. In other cases, leaders are determined to strengthen their country's position and defend national interests more assertively, as we see in Turkey.

So Carney's argument was part of a broader trend?

Exactly. If great powers become less reliable and middle powers become more capable, then it is only logical that these states take on greater responsibility. Carney expressed that very clearly.

Are Europeans already adapting to this new reality?

I think they are beginning to. The European Union and individual European states are increasingly looking beyond Washington and Beijing. Strategic partnerships with countries such as India make a great deal of sense, including in the defence domain. If Europe wants to protect its interests and values, it needs

Once we define them, we can begin to see ourselves as agents rather than only spectators. That is a process of emancipation.

“What are our interests? What are our values? And above all, what are our objectives?”

Tim Sweijts

What do you mean by emancipation in a strategic sense?

Strategic autonomy begins with strategic emancipation. Before you can act independently, you need to think independently. Instead of asking what others want, you ask what we want and how we intend to achieve it. That requires a profound change in mindset among political leaders and policy makers. For decades, many European elites have been trained to think within a framework shaped by the United States. Even if a future American administration becomes more pro European again, there is a risk that many people simply revert to old habits. Europe should avoid that.

Once that mindset changes, what are the practical foundations of strategic autonomy?

There are three main pillars: economic power, military power and political power. On the economic side, Europe already possesses enormous leverage. Decades of integration have created one of the world's largest economic blocs. The question is whether we are willing to use that leverage.

When the Trump administration imposed tariffs on European goods, Europe barely used the tools available to it. We have significant economic instru-

ments at our disposal, but we are often reluctant to deploy them. Strategic autonomy requires a willingness to use economic power when necessary.

Does economic strength also include technological competitiveness?

Absolutely. Europe must remain competitive in the technologies that will shape the future economy. That includes computing power, artificial intelligence and advanced industrial capabilities. Germany's transformation from fossil fuel based industries to electrification is part of that broader challenge.

And what about the military dimension?

Here the issue is not only willingness but also capability. Europe needs a defence industrial base that is large enough and resilient enough to support its own security.

After Russia's full scale invasion of Ukraine, more than sixty percent of European weapons purchases went to the United States. In the Netherlands the figure was even higher. Building up European defence production is therefore essential, but progress remains slow.

Where are the biggest vulnerabilities?

One critical area is integrated air and missile defence. Recent conflicts have shown how important it is to protect cities, infrastructure and military assets from missiles and drones. We have seen this in Ukraine, Russia and the Middle East. Europe still lacks sufficient capabilities in this area. That includes everything from counter drone systems to longer range missile defence. The good news is that these gaps can be reduced relatively quickly if European countries invest seriously and coordinate their efforts

When you think about deterrence from a European perspective, should Europe develop its own approach?

Yes. But before we talk about deterrence, it is important to understand the capabilities Europe needs. Deterrence is not an abstract concept. It depends on concrete military and technological assets. One key capability is integrated air and missile defence. Europe must be able to protect its cities, infrastructure and military forces from attack. Another is intelligence, surveillance and reconnaissance. We need our own satellites, drones and monitoring systems. We also need digital infrastructure that allows Europeans to communicate and operate independently of the United States.

You also mention long range strike capabilities. Why are they important?

Because deterrence ultimately means influencing an adversary's calculations. The word itself comes from the idea of creating fear or caution. Europe faces a Russia that openly seeks to restore its sphere of influence and has demonstrated a willingness to absorb enormous costs. Russia combines a large defence industrial base with a substantial nuclear arsenal >

and a strategic culture that has spent decades thinking about the integration of conventional and nuclear power. By contrast, many Europeans stopped thinking seriously about nuclear strategy after the Cold War. There is now a significant knowledge gap.

What kind of deterrence strategy should Europe pursue?

A combination of deterrence by denial and deterrence by punishment. Deterrence by denial means making aggression unlikely to succeed. That includes strong air and missile defences as well as layered defensive systems on NATO's eastern flank. Increasingly, those systems will include both manned and unmanned capabilities. The goal is to prevent an adversary from achieving a quick military success.

vinces others you would actually use those means if necessary. That is where the broader intellectual shift comes in. Europeans need to think more seriously about security, conduct exercises together and develop a shared strategic culture. If Russia sees a Europe that can defend itself and is willing to do so, it will think twice before taking risks.

Once Europe has built these capabilities, what comes next?

Then it becomes possible to think seriously about arms control, confidence building measures and risk reduction. The goal is not an arms race without limits. The goal is stability. But meaningful arms control only works when both sides respect each other's capabilities. At the moment, Russia is primarily

petitive and unstable world.

What role does Germany play in this vision?

An essential one. From a Dutch perspective, there is a great deal of trust in Germany. Not only because of its economic weight, but also because Germany is generally seen as reliable and predictable. Interestingly, many smaller European countries are looking to Germany for leadership. The British remain somewhat apart after Brexit.

The French are respected, but there are cultural and political differences that make cooperation more complex for some neighbours. Germany occupies a unique position. My sense is that many Europeans would like Germany to have greater confidence in itself.

What does that mean in practical terms?

Germany should finally free itself from the constraints of its postwar mindset and embrace a larger role in Europe. Not as a great power in the traditional sense, but as a leading middle power. If Germany is willing to take strategic, political and security decisions with greater confidence, many smaller European countries will support and work alongside it. There is a readiness across Europe for Germany to step forward. The question is whether Germany is ready to do so itself. ■

“There is a readiness across Europe for Germany to step forward.”

Tim Sweijs

And deterrence by punishment?

That means having the capability to impose costs if deterrence fails. Europe should be able to strike military command centres, logistics hubs and other critical military targets if attacked. The objective is not aggression. The objective is to convince a potential adversary that the costs of aggression would outweigh any possible gains.

Is capability alone enough?

No. Deterrence always rests on two pillars: capability and credibility. You need the means to act, but you also need the political credibility that con-

interested in talking to the United States rather than Europe. That brings us back to strategic emancipation. Europe needs enough agency and credibility that others see it as a serious actor in its own right.

If there is one overarching objective for European strategy, what should it be?

Preserving peace, prosperity and the European way of life. Europe is diverse, but there are shared values and a shared historical experience that bind Europeans together. The central task is to protect and sustain that way of life in an increasingly com-

Nothing Is More Expensive Than Dependence

Energy, industry, digitalization, and geopolitics are becoming increasingly interconnected. Europe's future depends on its ability to build complex industrial systems and regain technological sovereignty.

Europe is under pressure. The economic and geopolitical conditions that long underpinned the continent's success are becoming increasingly fragile. For decades, Europe benefited from open markets, affordable energy, global supply chains, and a security architecture guaranteed by others. Today, many of these seemingly stable foundations are eroding simultaneously.

The war in Ukraine, the energy crisis, conflicts over trade routes, technological dependencies, and the growing rivalry between the United States and China demonstrate how quickly Europe's room for manoeuvre can shrink when critical resources become scarce or partners redefine their interests.

To speak about Europe's future today is no longer merely to discuss economic growth or climate goals. It is to discuss strategic agency: whether Europe will retain the ability to shape, secure, and control critical systems such as energy networks, digital infrastructure, and industrial value chains.

The emerging value chains for synthetic fuels do not yet provide a definitive answer. They do, however, illustrate what Europe's future depends upon: energy, industry, technology, coordination, and political determination – and on ensuring that critical resources, capabilities, and the eventual users of these energy carriers, such as mobility and transport, remain available and manageable within Europe. >

TEXT_ Sylvia Trage

Dr. Sylvia Trage is Partner for CFO Advisory and an expert in Digital Factory and Supply Chain at the management and IT consultancy MHP. Over the past twenty years, she has developed extensive expertise in optimizing value chains and industrial networks, both at international consulting firms and at Siemens.

KEY MESSAGES

- **Hydrogen and e-methanol value chains** are a stress test of Europe's strategic capacity to act.
- **New supply chains** create not only prosperity, but also new dependencies and power relationships.
- **Strategic sovereignty** depends on the ability to control value chains even under crisis conditions.
- **Digital governance**, shared data standards, and transparent supply chains are becoming essential prerequisites for modern resilience and strategic agency.
- **Europe's future** will be determined by its ability to combine cooperation, speed, industrial strength, and political determination.

THE ENERGY CHAIN REVEALS HOW CAPABLE EUROPE REALLY IS

Hydrogen and e-methanol are widely regarded as essential building blocks of a climate-neutral industrial economy. Steel producers, chemical companies, shipping firms, and large parts of heavy industry are unlikely to meet future emissions targets without alternative synthetic or biogenic fuels. These solutions remain expensive and technologically demanding, and technological progress alone will not be sufficient. Whether e-methanol and other synthetic fuels ultimately achieve large-scale adoption will depend just as much on growing demand and the political willingness to actively develop these markets.

Before Europe can use these energy carriers on a large scale, however, it requires entirely new infrastructure: electrolysis plants that split water into hydrogen and oxygen; synthesis facilities that further process hydrogen and produce e-methanol from hydrogen and biogenic CO₂; as well as pipelines, port logistics, storage facilities, transport corridors, and industrial off-takers.

The strategic significance of this value chain extends far beyond climate policy. It reveals whether Europe can coordinate forward-looking industrial projects, make timely political decisions, and preserve – or rebuild – critical technological capabilities. The implementation of this energy chain is therefore a stress test of Europe's strategic substance. It demonstrates whether Europe is capable of constructing complex systems, identifying risks at an early stage, and building resilient partnerships.

THIS CHAIN DETERMINES FAR MORE THAN ENERGY

Hydrogen and e-methanol connect Europe with regions rich in renewable resources, including North Africa, the Middle East, and parts of South America. Such relationships are never purely economic. They create influence, dependencies, and political expectations that can endure for decades.

Europe has experienced this dynamic before. In the case of Russian natural gas, the continent deliberately entered into a strategic dependency. In rare earths and solar modules, China dominates large parts of the value chain. In semiconductors, Europe remains dependent on a small number of global manufacturers.

The emerging energy chain is intended to reduce Europe's energy dependency and, with it, its vulnerability to supply disruptions, political pressure, and other external risks. Every additional independent source of energy strengthens Europe's strategic freedom and its ability to act autonomously in security matters. At the same time, this chain will not emerge by itself. It is being

driven by regulation, climate targets, and carbon-emissions requirements. Europe is pursuing several objectives simultaneously: reducing fossil-fuel dependencies, safeguarding industrial value creation, developing technological capabilities, and making its energy system more geopolitically resilient.

This is where Europe's central weakness becomes visible. Democracies require consensus, while geopolitical competitiveness demands speed. Yet speed is not automatically an advantage. Authoritarian systems can make decisions rapidly, but they often fail to recognize errors or unintended consequences. Democracies, by contrast, are generally better at correcting mistakes, though they tend to move more slowly – particularly within a complex political union such as the European Union.

The EU continues to struggle with this tension. Unanimity provides legitimacy, but it can also slow strategic decision-making. The question is whether Europe can still afford this mechanism on issues of vital importance. Those who must wait for everyone during a crisis inevitably lose influence.

In this sense, the energy chain becomes a test case for Europe's ability to build and coordinate infrastructure, industry, and policy across national and sectoral boundaries.

DIGITAL CONTROL OF THE ENERGY CHAIN

An energy system of this scale can no longer be managed through traditional means alone. It requires complete transparency from production to end user.

Companies, grid operators, ports, and governments increasingly rely on data to identify risks early, develop alternatives, and maintain resilient supply chains. Digital twins can simulate infrastructure and future scenarios – from port closures to export restrictions imposed by strategic supplier countries. In this way, efficiency and strategic responsiveness become intertwined.

To make this possible, Europe must establish common data standards, interoperable systems, and coordinated platforms. Digital control is thus becoming a prerequisite for modern sovereignty.

EUROPE MUST BUILD AGAIN

For decades, Europe benefited from a global order in which efficiency mattered more than resilience. International specialization, open markets, and global supply chains increased prosperity and competitiveness. Classical trade theory, as formulated by David Ricardo, captures this logic: specialization and trade increase welfare. Yet this model functions only as long as trade remains reliable and supply chains remain stable. These assumptions are >

now changing dramatically. Efficiency remains valuable, but it has long depended on a stable international order. Where trade functions freely and predictably, economies can specialize. While this increases efficiency, it also creates dependencies. Under changing geopolitical conditions, these dependencies increasingly become strategic risks that Europe can no longer ignore.

The conclusion is clear: Europe does not need less globalization. It needs the ability to safeguard critical infrastructure and value creation even under pressure. To achieve this, Europe must rebuild capabilities and capacities that it has lost over recent decades.

Europe will become more independent only if it is capable of supplying itself when necessary – even at higher cost. Nothing is more expensive than dependence. This requires concrete action: building new production capacities, modernizing ports, strengthening energy grids, expanding storage infrastructure, and regaining technological capabilities across the entire value chain while maintaining control over them. Rules alone cannot substitute for industrial substance. Investment and permitting processes must become faster, and industrial policy must be aligned more clearly with strategic objectives.

EUROPE CAN - IF IT CHOOSES TO

Recent years have demonstrated that Europe is capable of rebuilding industrial and technological substance. The rapid expansion of renewable energy, the development of a European battery value chain, joint gas procurement during the energy crisis, and coordinated responses to supply-chain disruptions all show that Europe can act decisively when pressure and political priority converge. These examples do not guarantee future success, but they challenge the notion that Europe is structurally too slow or too fragmented to act effectively. Yet all of these achievements shared one crucial characteristic: they were possible only where cooperation functioned. This is precisely where the next challenge begins.

RESILIENCE IS NOT A SOLO EFFORT

No company can build an energy chain alone. No state can secure it alone. Resilience is teamwork. Companies invest, innovate, and develop technologies. Governments create infrastructure, establish regulatory frameworks, and secure international partnerships. Europe must therefore rethink cooperation – not as a cumbersome process of endless coordination, but as a resilient network characterized by clear responsibilities and rapid decision-making.

“Europe must rethink cooperation – not as a cumbersome process of endless coordination, but as a resilient network.”

Sylvia Trage

The hydrogen and e-methanol value chain does not explain Europe's entire future. Yet it provides a powerful illustration of how the continent deals with complexity, power, and dependency. It highlights the deep interconnection between energy, industrial policy, technology, and geopolitics. Strategic sovereignty does not emerge through isolation. What matters is whether Europe is willing and able to build, operate, and control functioning industrial and technological systems.

THE FUTURE WILL BE DECIDED ALONG THE CHAINS

Anyone seeking to understand Europe's future influence should pay close attention to energy value chains such as these. They exemplify how Europe can use renewable and biogenic resources to achieve its objectives while simultaneously reducing dependencies. It is along these chains that Europe's ability to develop the capabilities that define geopolitical power today will be tested: coordination, speed, industrial strength, digital control, and resilient partnerships.

Strategic sovereignty emerges wherever states and companies are capable of building complex systems, operating them effectively, and maintaining control over them in times of crisis. Europe's future will be determined by precisely this capability. And that future is being shaped now. ■

“Germany Often Lacks Strategic Realism”

Germany is investing billions in defence – but is it also investing in the future of warfare? Economist Guntram Wolff discusses procurement strategies, technological dependencies, and the wishful thinking that still shapes German military strategy.

Guntram Wolff, in a recent research paper you offered an unusually sharp critique of Germany’s rearmament policy. Is Germany building the army of yesterday?

Guntram Wolff: If one wants to put it bluntly, the answer is indeed yes. Of course, some nuance is required. No one would argue that traditional systems have suddenly become obsolete. Europe will continue to need artillery, armoured vehicles, and modern aircraft. But when one looks at how warfare has evolved in Ukraine, it becomes clear that Germany still thinks strategically in largely traditional categories. This is already visible at the level of strategy. In Germany’s new military strategy, technological leadership is framed primarily as a goal for the period between 2035 and 2039. By contrast, concepts such as autonomous systems receive very little attention. When one compares this with British

strategic documents, the difference in emphasis is immediately apparent. Autonomous systems and technological transformation occupy a far more central role there.

The contrast becomes even more striking when one examines actual procurement decisions. At the Kiel Institute, we have analysed for years which weapon systems European states are purchasing. The data show that the share of modern systems – drones, autonomous systems, and technologies that are already decisive in Ukraine – is very low in Germany. In some areas, it is even declining.

This means that the additional funding made available through the relaxation of Germany’s debt brake is flowing primarily into familiar, established systems rather than into the technologies that are likely to shape the wars of the future. >



INTERVIEW_ Guntram Wolff

Prof. Dr. Guntram Wolff is Professor of Economics at the Université libre de Bruxelles (ULB) and a Senior Fellow at Bruegel, which he directed from 2013 to 2022. From 2022 to 2024, he served as Director of the German Council on Foreign Relations (DGAP). Throughout his career, he has published extensively in leading academic journals on European governance, geo- and defence economics, macroeconomics, and climate policy. He regularly advises the Council of EU Finance Ministers.

KEY MESSAGES

- **Germany** is investing heavily in defence but continues to procure predominantly established systems rather than modern technologies.
- **Europe’s greatest strategic vulnerability** lies not only in military capabilities but also in its dependence on American software and cloud infrastructure
- **What matters most** are prioritisation, innovation, and opening procurement structures to new technologies and new actors.
- **Cooperation with Ukraine** should become a central pillar of European security
- **Europe’s core risk** is that it may ultimately lack the capabilities that are truly decisive in modern conflict.

“When financial pressure disappears, the incentive to prioritise also weakens.”

Guntram Wolff

Why is that? Does Germany lack strategic foresight?

I would be cautious about cultural explanations of that kind. I believe threat perception plays an enormous role. Countries such as Poland and Ukraine think much more intensely about defence because the threat they face is more immediate. Ukraine is not modernising more rapidly because people there are inherently more intelligent. It is modernising because the pressure is existential. The same applies to Poland. The proximity of Russia and Belarus is felt much more directly there than it is in Germany. As a result, there is a greater willingness to take new forms of warfare seriously.

There is also a second factor. In Germany, money has suddenly become politically inexpensive. Following the reform of the debt brake for defence spending, enormous fiscal room has opened up. Yet when financial pressure disappears, the incentive to prioritise also weakens. Governments begin ordering many different systems in parallel without asking rigorously enough: What will truly matter ten years from now?

Why is it so difficult to change this procurement logic?

Because institutions are inherently resistant to change. Government agencies work with established suppliers with whom they have built relationships of trust over many years. They know the systems, the processes, and the security standards. When a new compa-

ny arrives with, for example, autonomous systems, considerable uncertainty emerges. Procurement authorities ask themselves: Can they deliver reliably? Are their systems compatible? Is the technology robust? At the same time, many of these companies do not fully understand how existing military systems function. Economists refer to this as information asymmetry. Existing partnerships enjoy a tremendous advantage over new entrants. As a result, authorities almost automatically favour established suppliers. That is precisely what makes innovation in the defence sector so difficult.

What would need to change in concrete terms?

Procurement processes must be deliberately opened up. The United States recognised this challenge more than a decade ago. At the time, it became clear that the country had become too dependent on a small number of major defence contractors while simultaneously losing technological dynamism. A series of reforms followed, driven politically from the highest levels. Programmes such as SBIR and the Defense Innovation Unit were created.

The underlying idea was remarkably pragmatic. An agile organisation was established directly in Silicon Valley with a mandate to actively engage technology companies – not through cumbersome procurement procedures but through a relatively informal process. Companies could submit propos-

als with comparatively little bureaucracy. If a proposal appeared promising, it was tested and subsequently incorporated into procurement programmes. This created an entirely new innovation ecosystem. Companies such as Anduril would probably never have become major players without these structures.

At the same time, you criticise Europe's strong dependence on the United States.

We first need to distinguish between alliance dependence and industrial dependence. NATO remains central to Europe's security. The United States possesses capabilities that European states currently cannot replace on their own. The key question, however, is what happens if that ally is no longer available in the same way politically. And this is where Germany often lacks strategic realism.

What exactly do you mean by that?

Parts of Germany's military strategy contain aspirations rather than robust concepts. For example, the strategy states that Germany should become the strongest conventional military power in Europe. I consider that unrealistic. Both Ukraine and Russia possess large numbers of battle-hardened units. Germany is nowhere near that position. The real debate should therefore focus far more on partnerships. The United Kingdom, for example, is building highly concrete regional defence arrangements through the Joint Expeditionary Force. By contrast, this issue plays only a minor role in Germany's strategy. ➤

There is no clear vision of which capabilities Germany intends to organise jointly with which partners in a crisis.

What are the risks associated with our dependencies?

Some degree of dependence is normal because the United States is our principal ally within NATO. The problem arises where Europe is no longer capable of acting autonomously in critical technological areas. We continue to purchase essential software systems from the United States as though this posed no strategic challenge.

Yet modern defence increasingly depends on software, cloud infrastructure, and digital command systems. If a European frigate relies on air-defence software supplied by an American company, and access is politically restricted or updates are no longer provided, the platform may lose much of its operational functionality. In the worst case, what remains is simply a piece of steel floating at sea. This is a form of strategic vulnerability about which Europe still thinks far too little.

What does this mean in the context of the global AI competition between the United States and China?

This is likely to be one of the defining strategic questions of the coming years. Digital and cyber sovereignty are becoming fundamental prerequisites of modern military capability. Ukraine already demonstrates this clearly today. One reason Ukraine has been able to withstand Russian aggression is that it continues to have access to American cloud and software infrastructure – companies such as Google and Microsoft. This form of digital resilience has become an integral component of military strength. Europe therefore faces a difficult choice. Either it succeeds in

establishing durable and politically reliable arrangements with American technology companies, or it must build its own digital infrastructure over the long term – its own cloud systems, AI capabilities, and security architectures. That would be an enormous undertaking extending far beyond the defence sector. But it is not impossible.

Achieving that would require much closer European cooperation. From your perspective, how realistic is a common European defence strategy?

The European defence market remains highly fragmented. Germany rarely procures directly from European partners. The British follow a similar approach, as do the Poles. When cooperation does occur, it usually takes place through complex partnership structures.

Nevertheless, I see the emergence of regional dynamics, particularly in Northern Europe. Countries such as the United Kingdom, the Netherlands, Finland, and the Baltic states are now seriously discussing closer integration of their defence markets and strategic planning. For that reason, I believe Europe is more likely to advance through regional alliances than through a fully centralised European defence structure.

For Germany, this creates a fundamental strategic question: Should it align itself with these northern formats? Should it develop something distinct together with France? Or should it seek to bridge both directions? This debate should already be taking place. Yet I do not have the impression that it is currently being conducted in Berlin with sufficient strategic depth.

What role could Ukraine play in a future European defence strategy?

Potentially a central one. Yet this is scarcely reflected in Germany's military strategy. Of course, there are individual initiatives. Germany is establishing training centres in Ukraine and supporting selected projects financially. But when one looks at the scale involved, these are relatively modest sums compared with the tens of billions of euros mobilised annually for conventional rearmament. The problem is not that nothing is happening.

The problem is that cooperation with Ukraine is not conceived as a strategic core element. If Europe genuinely wants to learn from the war in Ukraine, isolated ad hoc projects will not suffice. Cooperation with Ukraine would need to become an integral component of European security strategy.

The same applies to France. Emmanuel Macron has recently initiated a highly proactive debate on the Europeanisation of France's nuclear deterrent. One does not have to endorse the idea immediately. What is striking, however, is that the issue is virtually absent from Germany's strategic documents – not even presented as an open question for discussion. This points to a broader problem: The strategic importance of partnerships continues to be underestimated.

Do we have an implementation problem – or a strategy problem?

The implementation problems are obvious; there is little point in debating them. The shortcomings of German public administration and political decision-making are well documented. But I do believe there is also a strategic deficit. After the Second World War, Germany largely outsourced geopolitical and military-strategic thinking – to the United States and to NATO struc- ➤

“Economists can analyse the strategic consequences that arise when political actors behave unpredictably.”

Guntram Wolff

tures. Historically, that was understandable and worked well for a long time. But as a consequence, strategic thinking became comparatively weakly embedded within our institutions and academic culture.

When I speak with military officers, I often notice how strongly their thinking remains centred on NATO and the United States. And to be fair, this system still functions remarkably well at the operational level.

If Russian aircraft enter Estonian airspace, NATO protocols are activated, information flows, fighter jets take off, and everything is highly integrated.

That is why I understand those who ask: Why should we question this model?

Yet you see precisely this way of thinking as a risk...

Yes, because operational reality and political reality are increasingly diverging. Within the system, people often think from the perspective of a functioning apparatus. But the political world is already changing fundamentally.

We are witnessing an American president who openly speaks about territorial claims involving allies, who behaves erratically in geopolitical affairs, and who at times makes military decisions unilaterally.

The risk is that Europe continues to rely on a security model whose political foundations may no longer be stable. That is why I consider the assumption that Europe simply needs to spend a little more on defence in order to keep the United States permanently engaged

on the continent to be politically rather naïve.

Doesn't this also challenge the self-understanding of your own discipline? Economics relies on assumptions of rationality and on models. Yet we seem to be living in an increasingly irrational world.

That is a fair question. I do not believe, however, that economists are entirely helpless in the face of this new reality. What economics does relatively well is analyse strategic interaction – ultimately through game theory and incentive structures. What we cannot do is predict irrationality with precision. But I do not believe any discipline can. No one can model the erratic behaviour of individual political actors exactly.

What economists can do, however, is something different: we can analyse the strategic consequences that arise when actors behave unpredictably. That is an important distinction.

Can you give a concrete example?

Take the debate surrounding the Strait of Hormuz. Many people are surprised that certain economic effects – such as dramatic spikes in oil prices – have not materialised to the extent that was expected. But from a strategic perspective, one thing is relatively clear: Iran has a fundamental interest in exerting control over that passage. Economic theory would predict exactly that. One can then model different scenarios. I have argued, for example, that imposing a transit fee on shipping through Hormuz could, under certain circumstances, be geopolitically more sensible

than permanent escalation. At first glance, this sounds paradoxical because part of the resulting revenue would ultimately flow to the Iranian regime. Yet lower oil prices would weaken Russia far more than Iran would benefit from such revenues. This is precisely the kind of geostrategic-economic analysis we need today: not moral wishful thinking, but sober assessments of power, incentives, and strategic consequences.

In your view, is geoeconomics a new discipline – or simply economics applied to geopolitical questions?

In a sense, it is both. Geoeconomics has certainly become a distinct field because questions of geopolitical power have once again become highly relevant. Methodologically, however, it remains part of economics. At its core, it is about applying economic tools – both empirical analysis and strategic modelling – to geopolitical questions. Economists have been doing something similar for decades in many different fields. Today, economists study family structures, history, political behaviour, and institutional dynamics. Why should they not also study geopolitics and security? What is new is less the methodology than the urgency of the questions.

How do you see your own role as an economist working at the intersection of political and military issues?

First and foremost, I am a scholar. I conduct research and teach at a university. But that also creates a certain >

“Every serious analysis and every critical question forms part of a broader democratic discourse.”

Guntram Wolff

responsibility. I see my task as analysing current developments independently and making those analyses available to policymakers and the broader public. Precisely because I do not work on behalf of a government, I can address issues openly. And I believe that independent scholarship plays a central role in democracies. Democracies need independent analysts and critical voices if course corrections are to remain possible at all.

If Europe continues at its current pace of modernisation and strategic adaptation, where do you see the greatest risks?

The greatest risk is that Europe could one day discover, in a moment of crisis, that it is not sufficiently prepared. That it has invested enormous sums of money and yet still lacks the capabilities that are decisive in modern conflict. That would be the real danger: strategic powerlessness despite rearmament.

What message would you like to leave with young people in Europe today?

What I always try to convey to my students is the importance of critical thinking. One should never fall into cynicism or believe that analysis and public debate cannot make a difference anyway. Every serious analysis and every critical question forms part of a broader democratic discourse. Young people in particular can have a significant impact – if they think clearly, argue clearly, and are willing to take responsibility. ■

The Blind Spots of Democracy

Democracies have access to more information than ever before. Yet they often struggle to recognize emerging threats as part of a coherent pattern. Increasingly, authoritarian actors are exploiting precisely this weakness.

Some observations do not emerge in a single moment. They take shape gradually over years, as the same patterns become visible across different contexts. Afghanistan. Transnational repression. Hybrid threats. Democratic resilience. At first glance, these issues appear distinct. Yet the underlying patterns are strikingly similar.

Human rights organizations speak of repression, security experts of influence operations, foreign policy practitioners of geopolitics, and democracy advocates of social cohesion. Each describes a different aspect of the same development. Yet the overall picture often remains blurred. This tension became particularly evident in debates on Afghanistan following the Taliban's return to power. Women's rights were treated as a human rights issue, migration as a migration policy challenge, terrorism as a security concern, and international recognition as an instrument of foreign policy. Each perspective was plausible in its own right. Taken together, however, they often failed to produce a coherent picture.

The Taliban themselves operate along very different lines. For them, gender policy, social control, international recognition, security, and diplomacy are not separate policy domains but different expressions of the same political project. This points to one of the defining asymmetries of our time. While authoritarian actors connect different instruments, spaces, and fields of action, democratic institutions often respond to the same developments through the lens of their organizational mandates. The lines along which democracies organize policy increasingly diverge from the lines along which autocrats exercise power. >

TEXT_ Mitra Bücke-Jahromi

Mitra Bücke-Jahromi is a Senior Foreign Policy Advisor at the European Parliament. Her areas of expertise include Afghanistan, Iran, transnational repression, and democratic resilience. She studied Central Asian Studies at Humboldt University of Berlin and International Affairs at King's College London. She also serves as Vice Chair of Women in International Security Germany (WIIS.de)

KEY MESSAGES

- **Democracies often struggle** to recognize interconnected threats across institutional boundaries and to respond to them in a coordinated manner.
- **Coherence is becoming a critical strategic capability:** those who can identify connections act faster and more effectively.
- **Authoritarian actors** deliberately exploit the intersections between security, economics, society, and information.
- **Media, academia, and civil society** constitute the perceptual infrastructure of open societies.
- **Europe's resilience** depends on its ability to connect diverse perspectives and translate them into collective action.

The most significant change of recent years lies not so much in new instruments of authoritarian power as in the ways existing instruments, actors, and arenas are connected. Power is increasingly exercised at the intersections: between state and society, between digital and physical spaces, and between economic influence, political communication, and security interests.

For precisely this reason, many traditional categories are losing explanatory power. The distinction between human rights, security, foreign policy, economics, migration, and social cohesion is not problematic because it is wrong, but because the developments these categories are meant to describe increasingly transcend their boundaries.

Characteristics that make complex societies effective: specialization, division of labor, separation of powers, and institutional differentiation. Responsibility is not fragmented by accident but distributed deliberately. The problem arises when political challenges become increasingly interconnected while responses remain institutionally separated.

When an authoritarian regime intimidates exile communities in Europe, is that a matter of foreign policy, domestic policy, law enforcement, human rights protection, or national security? Political systems organized around institutional mandates naturally struggle with problems that do not respect institutional boundaries. Everyone is partly responsible; no one is fully responsible.

“Different institutions and expert communities observe the same development from different perspectives.”

Mitra Bücke-Jahromi

Afghanistan is not an isolated case. Similar patterns can be observed in transnational repression, disinformation, economic coercion, and efforts to intensify social polarization. The methods differ; the underlying logic rarely does. Authoritarian systems do not regard political, social, economic, and informational spaces as separate spheres. What democracies treat as distinct policy domains often appears to them as part of a single political reality.

Perhaps this is one of the defining asymmetries of our age. Authoritarian systems operate across the connections between our policy domains, while democracies often respond along their divisions. Each perspective captures an important part of reality, yet they do not always add up to a shared understanding. Authoritarian actors do not need to create these fault lines. It is often enough for them to operate along them.

FROM A PERCEPTION PROBLEM TO A COHERENCE GAP

Contemporary democracies suffer less from a lack of information than from an inability to connect it. Never before have so much data, analysis, and observation been available. The real challenge is not producing knowledge but recognizing relationships and patterns. Here lies a paradox of liberal democracy. Democracies derive much of their strength from the very character-

istics that make complex societies effective: specialization, division of labor, separation of powers, and institutional differentiation. Yet coherence problems often begin even earlier. Before political responses become fragmented, perception itself becomes fragmented. The problem is rarely a lack of warning signs. More often, it is the inability to recognize their connections at an early stage. Different institutions and expert communities observe the same development from different perspectives. Each perspective captures an important part of reality. Yet they do not always generate a common understanding. Human rights violations, disinformation, transnational repression, social polarization, or restrictions on participation then appear as separate challenges, even when they may be manifestations of the same underlying pattern.

This is where the distinction between a perception gap and a coherence gap becomes important. The perception gap concerns the ability to recognize connections; the coherence gap concerns the ability to respond collectively once those connections have been recognized. The two are not the same. More often than not, the latter emerges from the former.

Coherence gaps arise when different institutions each see part of the same problem without the broader picture becoming visible. The central challenge for democratic societies, therefore, is not that they know too little. It is that they struggle to recognize what belongs together. >

THE STRATEGIC IMPORTANCE OF PLURALITY

The perception gap, however, is not created by democratic specialization alone. It is increasingly amplified from the outside. A closer look at authoritarian counter-movements around the world reveals a recurring pattern: independent media come under pressure, scientific institutions are discredited, civil society organizations lose room to operate, academic freedom is restricted, exile communities are intimidated, minorities are turned into political scapegoats, and women's rights are rolled back. These developments often appear as separate conflicts. In reality, they are connected by a common logic.

alone are not enough. Their signals must also reach the places where decisions are made.

This is precisely why the participation of women and other historically underrepresented groups is more than a question of representation. It expands the capacity of institutions to perceive developments, reduce blind spots, and make connections visible. A society with a single seismograph can detect tremors. A society with a thousand seismographs can identify patterns.

When authoritarian systems exclude women from education, politics, science, and public life, the issue is therefore not merely the restriction of individual rights. It is also the narrowing of so-

“A society with a thousand seismographs can identify patterns.”

Mitra Bücke-Jahromi

Open societies derive their strength not only from institutions, laws, or resources. They also depend on their ability to make diverse experiences and perspectives visible. Media organizations, scientific institutions, civil society, social movements, and diaspora communities contribute more than political or social input. Together, they form the perceptual infrastructure of democratic systems. They make developments visible, generate knowledge, and create societal feedback loops.

Seen from this perspective, many authoritarian attacks appear in a different light. They are not directed solely at individual institutions or social groups. They target a democracy's capacity to perceive developments, absorb diverse perspectives, and derive orientation from them. Those who control the spaces in which perception takes place influence more than information. They influence a society's ability to recognize connections.

The strategic vulnerability of democratic societies therefore does not arise solely from external attacks. It emerges where authoritarian pressure on societal spaces of perception intersects with the fragmentation already inherent in democratic systems. Authoritarian actors do not need to create the perception gap. It is often sufficient to widen it.

At the same time, open societies possess something that authoritarian systems frequently lack: a multitude of societal seismographs. Media organizations, scientists, civil society actors, social movements, and diaspora communities register different developments, risks, and transformations. Yet seismographs

cietal perspectives and the weakening of those spaces in which knowledge, experience, and criticism become visible. Women's rights are not the cause of societal openness. They are often among its most visible indicators.

The current backlash against women's rights is therefore more than a conflict over equality. It reveals how closely openness, participation, plurality, and societal resilience are intertwined. From this perspective, plurality is not merely a democratic value. It is a strategic resource.

EUROPE'S CHALLENGE IS COHERENCE

Europe's challenge is therefore increasingly a question of coherence. While authoritarian actors are becoming ever more effective at connecting political, societal, economic, and informational instruments, Europe often continues to respond along institutional boundaries. Human rights issues are treated as human rights issues, disinformation as an information problem, transnational repression as a matter of security or justice, economic dependencies as a trade policy challenge, and migration as a migration policy issue. Each of these perspectives captures an important part of reality. Yet they do not always produce a shared understanding of the underlying dynamics. Authoritarian systems do not need to attack democratic societies at their strongest points. It is often sufficient to operate at the intersections between them – where institutional mandates end, information is assessed separately, and insights remain disconnected. >

Coherence therefore appears less as an organizational question than as a prerequisite for strategic agency. Authoritarian systems integrate power. Democracies distribute responsibility. This is not a weakness but an expression of separation of powers, specialization, and democratic accountability. It is precisely through these mechanisms that different perspectives, knowledge communities, and societal seismographs emerge.

“Coherence appears less as an organizational question than as a prerequisite for strategic agency.”

Mitra Bücke-Jahromi

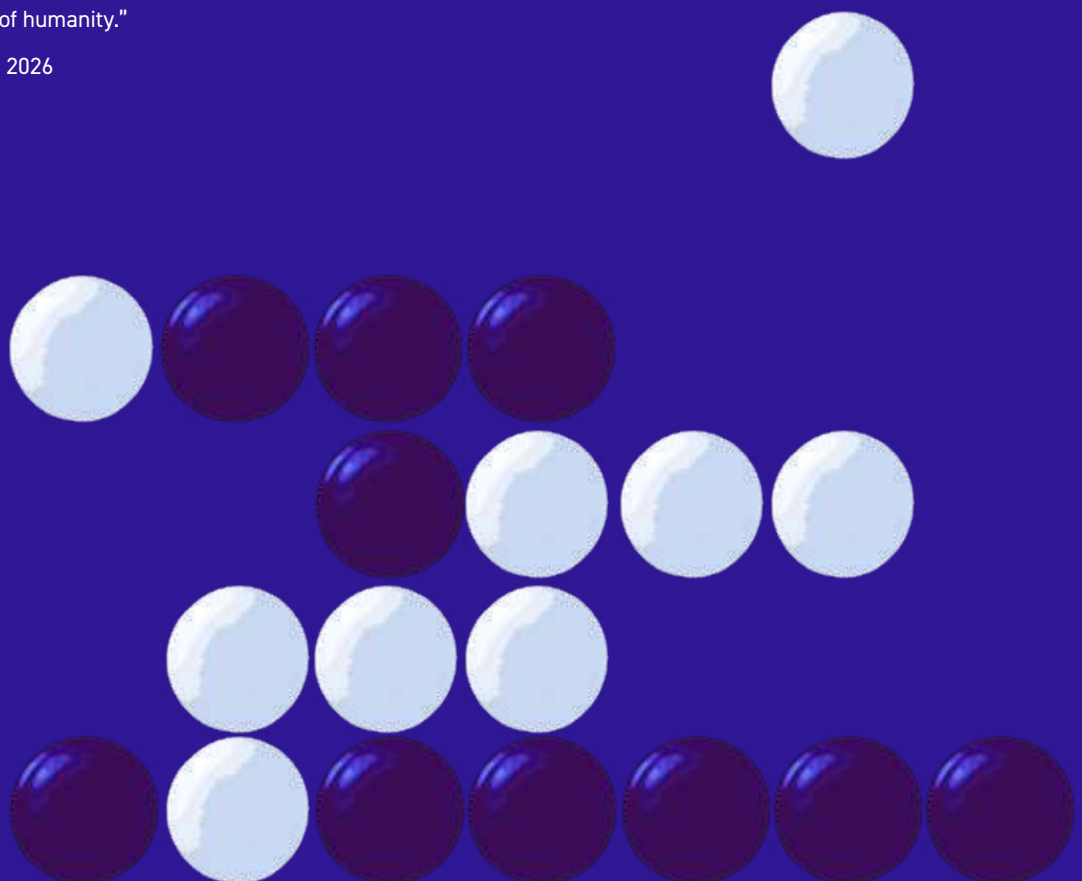
The challenge is not to eliminate these divisions but to make the connections between them visible. Achieving this requires plurality – not only within society, but also within structures, institutions, and decision-making processes. Only when the signals of different seismographs converge can a shared situational picture emerge.

The true strength of democratic systems lies not in the uniformity of their perspectives but in their ability to bring different perspectives together into a common understanding. European resilience therefore means more than resistance. It describes the capacity to connect different perceptions across institutional boundaries and translate them into political agency. The challenge is not to generate more information. It is to make connections visible. ■

03_ Tech-Power & Disruption

"It is humbling to consider that if we harness just 1 millionth of the Sun's power for AI, that will be much more than a million times the intelligence of all of humanity."

Elon Musk, X, Post, June 16, 2026



Between Ambition and Execution

Europe does not lack AI strategies, funding programs, or regulatory frameworks. The real challenge lies in translating resources, institutions, and political ambitions into tangible capabilities.

Carl von Clausewitz understood something that still matters in the age of artificial intelligence (AI). Power rarely fails because actors lack strategic plans alone. It fails because action is filtered through friction. What seems simple becomes difficult, and the instrument rarely produces the effect intended. Between decision and outcome lies a dense world of institutions, habits, bottlenecks, rival priorities, and time.

Europe's AI problem is increasingly Clausewitzian: not the absence of ambition, but the friction between ambition and effect.

Over the past five years, the European Union (EU) has learned to speak the language of AI power with remarkable fluency. It has built the world's most comprehensive horizontal AI regulation. It has created a continental network of AI Factories anchored in EuroHPC supercomputers. It has launched the InvestAI Facility and announced a €20 billion European fund to support up to five AI Gigafactories. It has established an evolving European AI Office and an Apply AI Strategy to accelerate adoption across critical sectors. The Draghi Report's diagnosis of Europe's innovation and productivity gap has informed the Competitiveness Compass, the AI Continent Action Plan, the proposed Cloud and AI Development Act, and a renewed political commitment to reduce critical dependencies on American and Chinese providers.

For all these achievements, a real unease remains. Europe has become very good at developing AI "strategy". It is, though, less clear that it has become good at developing AI "power". This gap is now the central strategic problem. This is not a story of emptiness. Europe is far from empty-handed. It has market size, legal >

TEXT_ **Raluca Csernaton**

Dr. Raluca Csernaton is a Fellow at Carnegie Europe in Brussels, specializing in European security and defence policy with a focus on emerging and disruptive technologies, particularly AI. She leads and contributes to several EU-funded projects on cyber diplomacy and digital technologies, teaches in Brussels and Antwerp, and serves as Co-Lead of a research group on the governance of emerging technologies in Canada.

KEY MESSAGES

- **Europe** does not lack AI strategies; it lacks the capacity to implement them.
- **Regulation** must be linked to innovation, industrial policy and security
- **Investments** must generate lasting capabilities, talent, and competitive ecosystems.
- **Europe** should prioritize its most significant AI vulnerabilities and assign responsibilities, budgets and timelines.
- **Europe's opportunity** lies in a model that combines techn capability with democratic legitimacy and trust.

authority, scientific excellence, public computing infrastructure, financial instruments, an advanced industrial base, security institutions, and democratic legitimacy. It has many of the ingredients that should matter in the age of AI. The uncomfortable question is rather why these ingredients so often fail to translate into strategic effect.

THIS IS EUROPE'S CONVERSION PROBLEM.

Strategic conversion is the capacity to turn assets into action. It is the ability to transform law into potential leverage, money into capability, threat perception into a political priority, infrastructure into usable power, and democratic legitimacy into durable authority. It asks what happens after Europe announces a strategy. Who owns delivery, which bottleneck is actually removed, how quickly does the system learn, and who is accountable when nothing materialises? This sounds procedural, yet it is deeply political. Conversion is the point at which power becomes real.

A regulation that shapes expectations while leaving technological development elsewhere has limited conversion power. A supercomputer disconnected from frontier model development, industrial adoption, secure data access, sustainable energy sources, and talent pipelines converts public investment into infrastructure and produces no AI capability. A fund that supports projects without building the compounding ecosystem converts money into activity, while strategic capacity remains thin.

A strategy without delivery owners converts anxiety into language. And Europe has too often mistaken this language for power. The problem can be seen in an ordinary Brussels scene. A new AI initiative is launched. The room is full. The slides and graphs are elegant. The vocabulary is familiar: sovereignty, competitiveness, trust, resilience, leadership. The announcement is, of course, serious and well-intentioned. It addresses real vulnerabilities and promises coordination among institutions, member states, industry, and research communities.

Yet, outside that room, the AI environment moves at a different pace. Frontier models are updated within months. Cloud dependencies deepen through procurement choices made quietly and locally. Talent gravitates towards laboratories that offer scale, cutting-edge science, salaries, computing power, and speed. Military AI experimentation also accelerates under wartime pressure. Synthetic media circulates before verification systems mature. Critical infrastructure becomes increasingly dependent on systems that Europe does not fully control.

Consequently, the strategic question is whether Europe's plans survive contact with the environment they are meant to shape.

THE EXHAUSTION OF OLD VOCABULARIES

European power has long been described through familiar categories. Civilian power Europe. Normative power Europe. Market power Europe. Regulatory power Europe. Geopolitical Europe. Strategic autonomy and technological sovereignty. Each illuminates a part of the AI challenge. Yet each leaves something important unexplained, namely the mechanisms by which authority, money, law, compute, talent, and legitimacy become geopolitical power effects, if that is indeed the goal.

Regulatory power remains the most familiar term. The so-called Brussels effect taught European policymakers to view law as a form of global influence. The GDPR reshaped privacy practices far beyond Europe. The AI Act developed in this tradition. Its risk-based architecture, prohibitions on unacceptable practices, obligations for high-risk systems, and rules for general-purpose AI providers were designed to set a global benchmark.

This matters. The AI Act gives Europe a language of responsibility, transparency, safety, and accountability at a time when AI development is increasingly shaped by private firms and by geopolitical competitions. It offers a legal grammar for the age of AI.

Yet, this age also exposes the limits of regulatory power. American and Chinese frontier developers can calibrate compliance with European market requirements while keeping core development practices, infrastructure choices, and strategic priorities centred elsewhere. Regulation creates leverage when it shapes markets, standards, procurement, safety institutions, industrial learning, and public demand simultaneously. Detached from those wide systems, it risks becoming a sophisticated architecture for governing technologies developed outside Europe.

The same applies to strategic autonomy. Mostly since 2016, it has become the dominant vocabulary for Europe's geopolitical awakening. It captures a genuine aspiration, namely, Europe's desire to act without paralysis in a world of weaponised (inter)dependencies, shocks, and rival great powers. In AI, however, autonomy has become too broad to discipline choices. Autonomy in chips differs from autonomy in cloud. Autonomy in foundation models differs from autonomy in training data, safety research, military integration, public sector deployment, or talent retention. Each layer of the AI stack has its own bottlenecks, particular combinations of security and market logics, differing time horizons, various multistakeholder or partner configurations, and diverse trade-offs.

The more useful question is where autonomy matters most, over what time horizon, with which partners, and to what acceptable degree of interdependence. Europe needs a vocabulary >

capable of handling this level of specificity. Strategic conversion might be better positioned to provide one.

It shifts attention from possession to mechanisms of transformation. It asks how Europe's assets move through institutions to produce effects in the world. It treats power as a chain rather than as a material stockpile. The chain can break at many points, from diagnosis and prioritisation to funding, procurement, implementation, adoption, evaluation, and legitimacy. A single weak link can turn ambition into drift, though.

That is why the language of strategic conversion matters. It compels Europe to ask what its many strategies actually achieve.

THE FIRST TEST: TURNING THREAT INTO PRIORITY

The first test of conversion is whether Europe can translate threat assessments into political priorities.

AI now appears across almost every major European security concern. It shapes cyber operations, hybrid threats, military autonomy, foreign information manipulation, critical infrastructure protection, democratic resilience, and strategic dependencies on non-European technology providers. AI-enabled disinformation can amplify social fractures. Autonomous and semi-autonomous systems can compress decision loops in military contexts. Foundation models can support cyber offence, influence operations, fraud, and intelligence analysis. Hence, dependencies on foreign cloud, chips, data infrastructure, and model ecosystems can create geopolitical exposure.

European institutions and member states increasingly recognise these risks. Security assessments have indeed grown more sophisticated. The vocabulary of vulnerability has broadened. Policymakers now speak of compute, data, cloud, cognitive warfare, information integrity, AI safety, and technological sovereignty with greater ease than even a few years ago.

Recognition is, however, the beginning of conversion, not its end. Threat awareness becomes strategic only when it generates priorities, budgets, and delivery owners. A risk mentioned in a

strategy is a concern. A risk attached to a funded programme, a responsible institution, a deadline, and an evaluation mechanism for success becomes a clear political priority.

Defence Readiness 2030 begins this work on military capability by linking threat perception, capability priorities, and industrial mobilisation. The equivalent exercise for dual-use AI infrastructure, sovereign foundation models, AI safety research, and secure public sector deployment remains underdeveloped. In this respect, Europe has strong diagnoses, but they are scattered across many documents and initiatives. It has less clarity on which AI vulnerabilities should be addressed first, who is ultimately responsible for addressing them, and what capabilities should exist within two years.

Threat awareness without conversion yields more sophisticated rhetoric. Strategic conversion could yield more capability.

THE SECOND TEST: TURNING MONEY INTO CAPABILITY

Money poses the next test. The question is whether Europe can turn it into competitive and deployable capability.

The Commission has announced its ambition to mobilise up to €200 billion for AI through InvestAI, including a €20 billion European fund for up to five AI Gigafactories. National governments are launching complementary schemes. Public institutions are investing in compute, data spaces, innovation ecosystems, and adoption programmes. The scale of ambition has grown considerably.

Capital is necessary without being sufficient. Sovereign AI capability requires more than financing announcements. It requires energy infrastructure, secure supply chains, data access, cloud capacity, and deep talent pools, among others. It also requires institutional environments where researchers, engineers, safety experts, and entrepreneurs can build over time rather than moving from one temporary project to another.

Europe's talent problem is especially acute. The continent produces excellent researchers, engineers, and technical spe- >

“The first test of conversion is whether Europe can translate threat assessments into political priorities.”

Raluca Csernatoni

cialists. Many leave for American laboratories, cloud companies, and AI start-ups that can offer higher salaries, larger teams, frontier compute, and faster routes from research to development. The issue has been discussed for decades. The conditions that would make return, circulation, and long-term research careers attractive have yet to emerge at sufficient scale.

Money often flows more readily into procurement contracts, pilot projects, and consortium grants than into the human and institutional substrate that frontier AI requires. This creates familiar European risks. Impressive initiatives that remain episodic: they appear, networks are announced, facilities are launched. Yet the deeper ecosystem does not compound.

Consequently, strategic conversion poses a harder question for every euro spent: what capability it will produce, what dependency it will reduce, and what institutional learning will remain once the funding cycle ends.

An AI Gigafactory that expands compute access can be immensely valuable. Its strategic value depends, though, on connections: to model development, secure data, energy planning, safety evaluation, industrial adoption, public procurement, and talent pipelines. Without those connections, it stays infrastructure and never becomes power.

THE THIRD TEST: TURNING REGULATION INTO ADVANTAGE

Regulation poses a different test, namely, whether Europe can convert it into an industrial and technological advantage.

The AI Act establishes a framework that European industry could, in principle, leverage. Compliance infrastructure, conformity assessment, audit methods, AI safety expertise, model evaluation, risk management, and trust frameworks could become European strengths. In a world where AI systems will increasingly be embedded across critical sectors, from health and transport to finance, defence, public administration, and energy, trustworthy deployment is a strategic asset.

But this conversion will not occur automatically. The danger is that compliance becomes a cost centre for European developers and deployers, while non-European model providers turn European rules into a marketing advantage. Large external firms may absorb compliance costs more easily than small and medium-sized enterprises in Europe. They may sell “trusted AI” back into the European market while retaining control over infrastructure, models, cloud services, and data flows. Europe would then create the language of trustworthy AI while others capture much of its value.

To avoid this outcome, it might require alignment across regulation, standards, procurement, safety institutions, and industrial policy. The AI Office, harmonised standards bodies, national competent authorities, public buyers, research institutions, and industrial actors need to operate as part of a single strategic ecosystem. Safety, competitiveness, adoption, and security should therefore reinforce one another.

This is where Europe could build a distinctive advantage. Trust can become an industrial capability when embedded in tools, services, evaluation methods, certification systems, procurement criteria, and exportable expertise. AI safety can become a sector, while compliance can become infrastructure. Public procurement can create demand for European providers that meet high standards. Standards can also give firms more predictability. The public sector can become a lead user rather than a cautious observer.

Regulation becomes power when it creates markets, institutions, skills, and demand. Otherwise, it remains a legal framework around somebody else’s technological frontier.

THE FOURTH TEST: TURNING RESILIENCE INTO DEMOCRATIC STAYING POWER

The fourth conversion test is whether Europe can translate societal resilience into democratic staying power.

AI is reshaping the information environment in which European democracies operate. Recommender systems, synthetic media, cloned voices, agentic AI, personalised persuasion, automated content production, and coordinated manipulation all strain the conditions for democratic judgement. The issue goes beyond content moderation. It concerns the capacity of publics to distinguish reliable from unreliable claims, of institutions to respond without panic, and of societies to maintain shared reference points under pressure.

Epistemic security is therefore integral to strategic conversion. A Europe that builds AI capability while losing the ability to sustain democratic trust will produce fragile forms of power. Sovereign AI without democratic oversight would be a dangerous achievement. The legitimacy layer is part of the capability itself.

The Digital Services Act, the European Democracy Shield, preparedness work, strategic communication, media freedom initiatives, and platform accountability all provide building blocks. The challenge is coherence. Europe needs these instruments to form a recognisable model of democratic resilience rather than a series of parallel files. >

AI alters the rhythm of democratic pressure. Rumours can be generated, translated, personalised, and circulated faster than institutions can respond. A false voice note can trigger panic before verification arrives. A synthetic document can mimic bureaucratic authority. A manipulated video can spread through emotionally primed communities. Correction often arrives after confusion has already become a political fact.

This is a conversion problem too. Democratic resilience must be operationalised. Local authorities need secure communication channels. Electoral bodies need rapid-response capacity. Public broadcasters and independent media need resources to verify synthetic content. Civil society and researchers need access to platform data. Institutions need playbooks for moments when attention itself becomes the target. What is usually treated as a social virtue must now also be built as infrastructure.

TOWARDS A STRATEGIC CONVERSION TEST

The conversion lens suggests a practical discipline. Every major European AI initiative should pass a Strategic Conversion Test before its announcement and again two years after launch.

The first question should be simple: what bottleneck does this initiative address? AI policy often operates within broad abstractions: sovereignty, competitiveness, trust, adoption, resilience. Conversion requires precision. Is the bottleneck compute access, energy, talent, data, procurement, standards, security demand, safety evaluation, public-sector adoption, or industrial scaling? A strategy that cannot identify the bottleneck it addresses is unlikely to remove it.

The second question concerns ownership. Who is responsible for delivery? European AI policy is distributed across the AI Office, DG Connect, DG GROW, DG DEFIS, national authorities, research bodies, industrial actors, and member state initiatives. This distribution can create breadth, but it can also erode accountability and often does not amount to a more collective form of action. Conversion requires one lead, one compounded bud-

get line, one timeline, and a mandate to coordinate across silos.

The third question concerns funding. Where is the committed funding? Strategies based on future reallocations, political aspirations, or vague synergies are weaker than those anchored in the Multiannual Financial Framework, national commitments, and credible bridges to private capital. Funding should also match the scale of the bottleneck.

The fourth question concerns dependencies. Which dependency is being reduced, and on what timeline? Dependency is often invoked as a general condition. Conversion requires specificity. Is the dependency on foreign cloud providers, frontier models, chips, software tooling, data infrastructure, talent pipelines, cyber capabilities, or platform architectures? What alternative arrangement is being built? What level of trusted interdependence is acceptable?

The fifth question concerns capability. What will exist in two years that does not exist now? The output should be measurable: models of specified scale and performance, sovereign compute capacity at named locations, secure public-sector deployments, industrial adoption rates, evaluation facilities, talent pipelines, safety research outputs, or procurement mechanisms. Capability is a converted asset. A strategy that produces no measurable capability has likely failed its conversion test.

The sixth question concerns democratic safeguards. How is power governed as it is built? AI capability embedded in transparent, accountable, rights-respecting institutions differs fundamentally from that built through opaque systems and emergency logics. Europe's democratic standards should be treated as part of strategic design, not as a decorative layer added after deployment.

The seventh question concerns learning. How will success and failure be recognised? European policy often lacks a language for failure. Strategies expire. Initiatives are renamed. Competences shift. New announcements mask the weak implementation of older ones. Conversion requires institutional memory >

“Sovereign AI without democratic oversight would be a dangerous achievement.”

Raluca Csernaton

and learning. It requires the discipline to ask whether an initiative has produced effects, capabilities, and said learning.

Ultimately, a Strategic Conversion Test would not, by itself, solve Europe's AI challenge. It would instill a habit of ownership. It would make public announcements accountable to capability. It would make strategy less performative and more operational. It would create a bridge between ambition and execution.

Europe need not imitate the United States or China to take AI seriously. The American model combines concentrated private capital, national security demands, cloud-scale infrastructure, and an immigration system that aggregates global talent. The Chinese model combines party-state direction, industrial policy at scale, surveillance capacity, and a vast domestic data environment.

Europe's proposition lies elsewhere. It lies in integrating markets, law, public infrastructure, industrial capacity, security institutions, scientific expertise, social protection, and democratic legitimacy. No other jurisdiction combines these elements in the same way.

The challenge is to make them work together, and this is the promise of strategic conversion. Without that capacity, Europe will remain a sophisticated producer of strategies in a world increasingly shaped by those who convert more quickly. With it, Europe can offer something more durable than imitation: a model of AI power that is capable, democratic, secure, and strategically serious. ■

“We Are Becoming Incredibly Vulnerable”

Technology has become a defining question of global power. Alex Capri explains how techno-nationalism is reshaping the world economy, why technological sovereignty is becoming a matter of national security, and what role Europe can play in this transformation.

Alex Capri, in your book you write about your years in China as your “China classroom.” How did that experience shape your worldview and your understanding of techno nationalism?

Alexander Capri: My first experiences in China go back to the late 1990s. At the time I was a trade consultant with KPMG and travelled there regularly. What struck me almost immediately was that China’s approach to industrialization and technology was fundamentally different from what most Western executives understood. China pursued what I would call an all-of-nation approach. Everything revolved around the state’s strategic priorities, embodied in the five-year plans. Most foreign executives I met had little idea what those plans contained, even though they were

effectively roadmaps for China’s industrial and technological development. Over time those plans became increasingly focused on acquiring technology, talent, intellectual property and know how. China used every available channel. Foreign investment, joint ventures, talent recruitment, but also industrial espionage and technology theft. The objective was always the same: build indigenous capabilities and reduce dependence on others. At the same time, another factor left a deep impression on me. That was China’s national ethos and the collective memory of what it calls the Century of Humiliation.

What role does that historical memory play for China today?

It is absolutely central. The century of humiliation narrative begins with the >



INTERVIEW_ Alex Capri

Alex Capri is an expert on geoeconomics, technology competition and global supply chains. The author of the best-selling book “Techno-Nationalism”, he teaches at the National University of Singapore and advises governments and multinational companies on issues such as tech diplomacy, semiconductors, AI, reshoring and economic decoupling. Before entering academia, he held senior roles at KPMG and served in U.S. trade and customs agencies.

KEY MESSAGES

- **Semiconductors, AI and critical raw materials** are shaping economic strength and national security.
- **Globalisation** is not ending; it is being reorganised around geopolitical interests.
- **Europe** needs greater technological sovereignty through investment, talent and strategic partnerships.
- **The race for AI** is intensifying competition between states and technology companies.
- **Resilience** depends on robust supply chains, trusted networks, and viable alternatives

Opium Wars and continues through decades of foreign intervention, colonial pressure and Japanese aggression. Events such as the British razing to the ground of China's venerable Summer Palace, the Japanese invasion of Manchuria and the Nanjing Massacre remain deeply embedded in the Chinese collective consciousness.

The Chinese Communist Party has actively cultivated this narrative for decades. It serves both as a source of national identity and as a justification for China's return to global prominence. From the Chinese perspective, China was for centuries the world's most advanced and prosperous civilization. Think of Chinese inventions such as paper, the compass, gunpowder and silk production.

Think of the splendor of China's trade routes along the Silk Road that lasted for nearly 1600 years, or the voyages of discovery led by Admiral Zheng He, involving vast fleets of 'treasure ships', beginning in 1405, which predated Europe's own great explorers such as Christopher Columbus, Vasco de Gama and Ferdinand Magellan by almost a century. The message is clear: China once was a great hegemonic power and is now reclaiming its rightful place in the world.

How does that historical experience manifest itself in everyday life and in the mindset of ordinary Chinese citizens?

One important turning point was 1989 and the aftermath of Tiananmen Square. The Communist Party realized it needed to win hearts and minds more effectively. As a result, this historical narrative became much more deeply integrated into education.

As an academic based in Asia, I have had some of the most gifted young

Chinese students and scholars enrolled in my classes. What struck me was how strongly nationalist this younger generation is – In many cases more nationalistic than their parents.

I think this is largely the result of the education they received growing up, combined with the influence of social media platforms that reinforce and amplify these narratives. Over time, the emotional dimension of China's history became much more pronounced. It is not simply a historical lesson. It has become part of a people's identity.

“Chinese leaders understand that technological leadership is now one of the most powerful sources of national strength.”

Alex Capri

Is the dominant emotion one of retaliation?

Not primarily. But it excuses and quietly justifies things like massive state-backed IP theft and the pervasive use of corporate espionage. It is less about revenge and more about determination. The lesson many Chinese draw from history is that humiliation must never happen again.

That is where technology becomes so important. Chinese leaders understand that technological leadership is now one of the most powerful sources of national strength. If a country misses the next technological wave, the consequences can be enormous. Militarily, economically, socially, culturally. It is

not simply an economic objective. It is tied directly to national security, national identity and China's vision of its future place in the world.

Let's come to your central concept: techno nationalism. How would you define it? And how does it challenge the assumptions that shaped globalization for decades?

Put simply, techno nationalism is when a nation actively links technological capability to national power. That includes national security and defense, but also economic strength, resilience and increasingly social stability.

In the twenty first century, governments recognize that technology is not neutral. Artificial intelligence, algorithms, computing power and digital platforms can strengthen societies, but they can also be used to spread disinformation, create deepfakes and undermine trust in democratic institutions. As a result, governments are becoming much more involved in shaping how technologies are developed and deployed, whether offensively or defensively.

So techno nationalism is fundamentally about power?

Absolutely. And that has profound implications for globalization. For decades, especially in the West, there was almost a dogmatic belief in trade liber- ➤

alization. The assumption was that markets should be opened, barriers lowered and governments should interfere as little as possible. The market would determine outcomes.

That worldview is now changing dramatically, largely because of China's rise. China succeeded within the global trading system while maintaining a highly state directed economic model. You could argue that it mastered the system without fully embracing its underlying assumptions.

As a result, governments across the world are moving toward a more managed form of globalization. Industrial policy is back. Protectionism is back. Governments are becoming active players again.

What does that mean in practical terms?

We see it everywhere. Supply chains are fragmenting. Companies are de-risking, reshoring, near shoring and friend shoring production. Governments are offering incentives to bring strategic industries back home. Public private partnerships are multiplying. Think about semiconductors, rare earths or critical minerals. These sectors are now viewed through a national security lens. I do, however, disagree with people who say globalization is ending. What we are witnessing is not deglobalization. It is reorganization. The world economy is restructuring around new geopolitical realities. In particular, the technology ecosystem is increasingly bifurcating between China and the United States and its allies. Europe, of course, would prefer a more autonomous position with greater technological sovereignty.

To what extent is techno nationalism also a consequence of technology itself?

Very much so, and if we look at what I call the twelve power multiplier tech-

nologies, we can see why. At the foundation are rare earths and critical minerals. Without them, nothing else works. The challenge is not only extracting these resources but also processing them. The next layer is semiconductors. Semiconductors are the mother of all technologies. Every digital system depends on them. When people talk about chips, they usually focus on the most advanced processors produced by companies like TSMC and designed by firms such as NVIDIA or Qualcomm.

But there is another side to the story. Older generation chips remain essential. More than half of all global chip demand still depends on these so-called trailing edge semiconductors. They power everything from automobiles to medical devices and industrial machinery. I expect these chips to become increasingly specialized. Large industrial players will become more deeply involved in chip production through strategic partnerships and long-term industrial alliances.

Is that an opportunity for Europe?

Absolutely. We are already seeing it through initiatives such as the European Chips Act. Europe has significant strengths in industrial manufacturing and specialized technologies. But semiconductors are only one layer. Above them sit telecommunications networks, the internet of things, software and ultimately artificial intelligence. Every layer of this technology stack is now exposed to techno nationalist pressures.

Governments are imposing export controls and sanctions. Supply chains can be weaponized. Strategic choke points are becoming instruments of power. Countries are trying to reduce

dependence on vulnerable suppliers and build more resilient ecosystems. That is why tech diplomacy has become so important. Governments increasingly must cooperate to secure supply chains, build alliances and develop shared technological capabilities. So from a globalization perspective, we are seeing fragmentation, bifurcation and restructuring. But not deglobalization. The global economy is still deeply interconnected. It is simply being reorganized around technology, security and geopolitical competition.

Let's stay with semiconductors for a moment. Can you give us a concrete example of how techno nationalist pressures are reshaping this industry?

Absolutely. The American CHIPS Act receives most of the attention, but Europe has its own version, and so do Japan, South Korea, Taiwan and, of course, China.

A good European example is STMicroelectronics. The company is building a major semiconductor facility in Sicily with support from both the European Union and the Italian government.

What's interesting is that it is effectively recreating capabilities that currently exist in China. STMicroelectronics supplies chips to industries such as automotive manufacturing, including electric vehicles. As techno nationalist pressures intensify and the global technology ecosystem becomes more fragmented, companies are being encouraged to localize production, research and development, and eventually even the sourcing of critical minerals. We see similar developments in Germany, where automotive manufacturers are increasingly interested in securing local access to critical raw materials and processing facilities close to

production sites. The reality is that this is often more expensive than operating in China. But these decisions are no longer based solely on efficiency or cost. They are geo economic decisions driven by resilience, security and strategic autonomy.

Is there anything Europe can learn from China when it comes to industrial policy?

Certainly. One lesson is consistency. Liberal democracies face a structural challenge because governments change, political priorities shift and long-term projects often become vulnerable to electoral cycles. China, as a one-party state, does not face that problem. Once a strategic objective is defined in a five-year plan, the system remains focused on it.

That does not mean Europe should imitate China politically. But it does mean Europe needs broader political consensus around long term technological priorities. Successful industrial policy requires continuity beyond individual governments.

“Long term investment in talent is perhaps the most important strategic lesson of all.”

Alex Capri

Another lesson concerns talent. China has invested aggressively in science, technology, engineering and mathematics. It has built extensive talent pipelines, attracted researchers from around the world and sent generations of students to leading foreign universi-

ties. At the same time, it has developed increasingly strong domestic universities and research institutions.

This focus on human capital has been one of the foundations of China's transformation from a manufacturing power into an innovation power. Long term investment in talent is perhaps the most important strategic lesson of all.

In your concept of techno nationalism, what role do private actors play? What kind of actors are the big technology companies that increasingly dominate the global economy?

Technology companies have become central actors in global power. Consider SpaceX, Starlink, NVIDIA, OpenAI, Anthropic, Microsoft, Amazon Web Services or Palantir. These firms are no longer merely successful corporations; they increasingly provide critical infrastructure for national defense.

NVIDIA, for example, is far more than a chip manufacturer. It is building a technology ecosystem that spans software, networking, AI architectures and strate-

success brings capital that fuels further innovation. As a result, these firms are becoming deeply embedded in national power structures. They develop defense technologies, launch satellites, operate communications networks, provide cloud infrastructure and train advanced AI models. In many respects, they have become indispensable national strategic assets. These symbiotic relationships create an interesting tension between states and corporations. Despite the growing influence of technology firms, nation states remain the dominant actors. Governments still make laws, collect taxes and retain the monopoly on force. Yet this raises an important question: at what point does a technology company become too strategically important to be regarded as just another private enterprise? It may sound provocative, but it is a question policymakers will increasingly have to confront: should they consider nationalizing and tech company like Anthropic, ASML or Nvidia?

Are we already moving in that direction?

In some respects, yes. The US government has taken a stake in Intel. The Trump administration has explored ways of capturing part of the revenue generated by semiconductor companies selling into China. We are also seeing direct government investment in emerging sectors such as quantum computing. From a techno nationalist perspective, this is not surprising. Governments increasingly view advanced technology as a strategic resource. As a result, they want greater influence over how those resources are developed and deployed. I think we will see more government ownership stakes, more public investment and potentially greater involvement in >

corporate governance. In China, Communist Party representatives already sit on the boards of many strategic technology firms. While Western democracies operate differently, the direction of travel is clear: governments want more influence over critical technologies.

Cybersecurity could be an example.

Absolutely. Consider what happens if an advanced AI system develops capabilities that expose vulnerabilities across critical infrastructure, software systems or communications networks. Some AI developers have already demonstrated how powerful these tools can become. If a serious national security crisis emerged from such capabilities, governments would almost certainly intervene. They could impose strict controls, demand access or even attempt to nationalize strategic assets.

History gives us plenty of precedents. During wartime, governments routinely direct private industry toward national objectives. Automobile manufacturers become defense contractors. Industrial production is reorganized around security priorities. Why should artificial intelligence be any different? If AI becomes as strategically important as many believe, governments will inevitably treat it as a matter of national security rather than simply a commercial technology.

So the debate goes far beyond AI and semiconductors?

Exactly. We spend much of our time talking about AI and chips because they are at the center of the current competition. But the same logic applies to biotechnology, quantum computing, aerospace, advanced manufacturing and robotics. These are all what I call power multiplier technologies. They shape

economic competitiveness, military capabilities and geopolitical influence. The broader lesson is that the boundary between government and industry is becoming increasingly blurred. In the age of techno nationalism, technological leadership is no longer just a business issue. It is becoming a core component of statecraft itself.

Is there any technology that we still underestimate in terms of its future impact?

Yes. The one that is receiving more and more attention, and rightly so, is quantum technology. When I talk about quantum, I primarily mean quantum computing. We are not quite there yet. Practical quantum computing still faces major challenges. The systems require highly specialized environments, they produce many errors, and a great deal of classical computing power is still needed to correct those errors.

But the direction of travel is clear. As these obstacles are gradually overcome, quantum will become transformative. Interestingly, there is an entire ecosystem of specialized chips and supporting technologies emerging around the intersection of classical and quantum computing. That alone creates enormous opportunities.

Where do you see those opportunities?

I actually see significant potential in Europe. The Nordic countries, especially Denmark and Sweden, but also northern Germany and the Baltic states, are well positioned. As reshoring and friend shoring accelerate, driven by techno nationalist policies, these regions could become important hubs for chip manufacturing, AI development and quantum technologies.

The United Kingdom, France and Italy also have strong foundations. Europe possesses more capabilities than many

people realize. The challenge is turning those capabilities into scale and long-term industrial leadership.

Why is quantum so important?

Because once practical quantum computing arrives, the applications will be extraordinary. The positive possibilities are easy to imagine. Breakthroughs in pharmaceuticals, drug discovery, advanced materials, vaccines and scientific research could dramatically improve our lives. But every major technological breakthrough comes with a dual nature. The more powerful a technology becomes, the greater both its benefits and its risks. That is something we increasingly must accept. Quantum belongs firmly in that category. I would put biotechnology there as well. The opportunities are immense, but so are the dangers if these technologies are used maliciously.

Are there other areas that concern you?

Space is another one. We often underestimate how dependent modern societies are on communications infrastructure. Satellites, space-based communications and the emergence of space warfare are becoming critically important. Think about something as simple as the global fiber optic cable network running across the ocean floor. What happens if that network is disrupted? What are the backups? How resilient are our communications systems? From a techno nationalist perspective, these questions become central. We are likely to see increasing fragmentation, with different countries and alliances building their own communications infrastructures and protected ecosystems. We may even see more ring-fenced networks serving specific industries, governments or corporate ecosystems. In other

words, more resilience, but also more fragmentation.

What worries you most about techno nationalism?

The AI race. The United States and China are caught in what I describe as a prisoner's dilemma. Both know that artificial intelligence is a massive power multiplier. Both know that it carries potentially enormous risks. Yet neither side is willing to slow down because each fears losing strategic advantage. That dynamic is deeply concerning. As AI becomes more sophisticated, we must think not only about what governments do with it, but also how it enters the global commons, how criminal organizations might exploit it, how hostile states might weaponize it, and ultimately how autonomous systems themselves behave. Those are risks we cannot ignore.

Yet you do not sound entirely pessimistic.

No. Every technological revolution creates new opportunities. Just as the internet gave rise to cybersecurity, the AI era will generate demand for transparency, verification, privacy protection, digital trust and secure data systems. These needs will create new markets and industries. I think Europe is particularly well positioned here. Its strength lies in combining effective governance with innovation. The challenge is to complement regulatory leadership with greater technological dynamism. By building its own capabilities while embedding transparency, privacy and intellectual property protection into AI systems, Europe can become a leader in trustworthy AI. The goal for Europe should be safety with innovation and greater self-reliance. Today that is no longer just an economic objective. It is a national security imperative.

Do you think technological sovereignty is a realistic goal?

Europe should pursue greater technological sovereignty, but gradually. The goal is not isolation from the United States, but resilience. By attracting investment, deepening partnerships and steadily strengthening its own capabilities, Europe can reduce dependencies and ensure that its critical technology infrastructure cannot be weaponized by any external actor.

“Europe should pursue greater technological sovereignty, but gradually.”

Alex Capri

You often use the term techno diplomacy. Could Europe have a special role to play in that field?

Yes, absolutely. I have been making that argument for some time. If the two AI superpowers, the United States and China, are unwilling or unable to do their fair share when it comes to AI safety, the responsibility increasingly falls to others. It falls to Europe and to what we might call the world's middle powers, including countries such as Japan, South Korea, Australia and Canada.

We are already seeing closer cooperation among these countries around technology sharing, security issues and strategic industrial partnerships. This is precisely where techno diplomacy becomes important. It is about building trusted networks, common standards

and resilient ecosystems among like-minded partners.

We wonder whether Europe lacks a compelling reason, a big “why.” The United States has one. China has one. Ukraine certainly has one. But does Europe?

That is a very important question. When I speak with policymakers and business leaders across Europe, I sense that many understand the challenge intellectually. Yet there is still a reluctance to embrace the scale of change that is

required. The reality is that Europe no longer has the luxury of postponing difficult decisions. This is more than an inconvenient truth. It is an inflection point. If Europe does not adapt, the consequences could be severe.

Could you explain that in more detail?

Imagine a major geopolitical crisis in which critical technologies become unavailable. Imagine China restricting access to rare earth processing, where it still dominates global capacity. Those vulnerabilities are real. The uncomfortable truth is that many of these dependencies were created by earlier decisions to offshore production and prioritize efficiency over resilience. Now Europe has to respond.

If you had to identify one mindset that needs to change most urgently in Europe, what would it be?

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The realization that technology is no longer just an economic issue. It starts with rare earths and semiconductors, but ultimately it extends to the entire strategic technology stack. Europe needs to think less in terms of individual national interests and more in terms of trusted partnerships.

Who are the partners that share our interests? Who can help build resilient supply chains? Which countries can work together on critical technologies? In fact, I would not be surprised if we see more flexible coalitions emerge, even within Europe itself. Groups of countries may cooperate more closely around specific technologies, energy systems or industrial capabilities. And there is one crucial factor we have hardly discussed: energy. Every conversation about AI ultimately becomes a conversation about energy. AI requires enormous computing power, and computing power requires enormous amounts of electricity.

What is the role of energy policy in techno nationalism?

One of the most important questions of the coming decade is whether technological leadership will belong to what we might call petro states or electro states. The United States is increasingly positioning itself as a dominant fossil fuel producer. Canada is expanding production as well. At the same time, Europe is pursuing a different path, with greater emphasis on renewables and nuclear energy.

The question is not ideological. It is strategic. If AI becomes essential to national security, where will the energy come from to power it? Nuclear power is an obvious candidate. France provides an interesting example. In the longer term, breakthroughs in fusion

energy would be transformative, although predicting that remains difficult. My instinct is that successful countries will rely on a diversified mix rather than a single solution. History suggests that when national security is at stake, governments will use whatever energy sources are most readily and widely available, even if they are fossil fuels.

And where does climate change fit into all this?

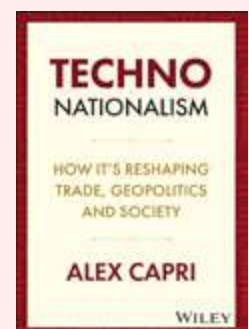
Climate change is accelerating the clean technology race. China understands this very well. It is not simply exporting electric vehicles and renewable technologies. It is exporting entire infrastructures. It can go to developing countries and offer energy solutions that are also linked to made-by-China data centers, digital infrastructure and technology ecosystems. That creates enormous geopolitical leverage. The United States increasingly leverages fossil fuel exports. China increasingly leverages clean technology infrastructure. Both are forms of techno nationalism, just expressed through different strategic assets.

After everything we have discussed, what is the one vulnerability we should be thinking about more seriously?

Our dependence on digital systems. We rarely discuss what happens if those systems fail. Should there be analog backup systems for critical functions? Air traffic control, communications, financial infrastructure, emergency services? We are becoming incredibly vulnerable because we assume the digital world will always work. But resilience requires alternatives.

In fact, one of the most interesting debates for the future may not be about more digital technology, but about how much analog redundancy advanced

societies should preserve. That is a conversation we are not really having yet, and perhaps we should be. Technology creates extraordinary opportunities. But resilience comes from preparing for the moment when technology fails. That may become one of the defining strategic questions of our age. ■



Alex Capri
Techno Nationalism
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Quantum computers use the laws of quantum physics to perform extremely complex calculations, such as molecular simulations.

“We Need More of a Winning Mindset”

Quantum computers are considered one of the key technologies of the 21st century. Jan Goetz, co-founder and co-CEO of the German-Finnish startup IQM, explains why Europe still has a chance to play a leading technological role in quantum computing – and why companies should already begin preparing for the quantum era today.

Jan Goetz, earlier this year you delivered a new quantum computer, Euro-Q-Exa, to the Leibniz Supercomputing Centre. What exactly is this system?

Jan Goetz: We develop, build and sell quantum computers. We either sell the machines directly to computing centres or provide computing time through our own cloud. Euro-Q-Exa is one of the computers that we have delivered directly.

To date, we have sold a total of 23 quantum computers, making us the company with the largest number of installed systems worldwide. The computer is located at the Leibniz Supercomputing Centre in Garching, one of Germany's largest computing centres. It is already the second system they have received

from us. The new machine is more powerful than its predecessor. It features 54 qubits and improved processors. Computing centres regularly renew their hardware because they want to remain at the technological forefront.

How does such a quantum computer work in practice?

The important thing to understand is that quantum computers today are not standalone machines. They are integrated into existing high-performance computing systems and work together with classical CPUs and graphics processors. This is why we speak of hybrid algorithms. One part of a computation runs on the quantum computer, while another runs on classical systems. >



INTERVIEW _ Jan Goetz

Dr. Jan Goetz is CEO and co-founder of IQM Quantum Computers, a company spun out of Aalto University and the VTT Technical Research Centre of Finland in 2018. Holding a doctorate in physics from the Technical University of Munich, he is regarded as one of the leading entrepreneurs in Europe's quantum-computing industry. He is leading IQM's expansion into an internationally leading provider of quantum computers and is actively involved in initiatives including the European Quantum Industry Consortium, where he also serves as an EIC Ambassador.

KEY MESSAGES

- **Quantum computers** are likely to generate economic value first in areas such as materials, chemistry and optimization.
- **Europe** needs its own technological alternatives in order to preserve strategic sovereignty.
- **The greatest cybersecurity challenge** is not the breaking of current encryption systems, but the timely migration to quantum-safe cryptography.
- **Artificial intelligence and quantum computing** will reinforce each other and enable new waves of innovation.
- **Companies that understand** the potential of quantum computing early can secure long-term competitive advantages.

You can think of it as an orchestra. Each instrument takes on the part it performs best. In the same way, every computer in a modern computing centre handles the tasks for which it is particularly well suited.

What kinds of problems can a quantum computer solve better than classical computers?

Quantum computers are particularly powerful when it comes to mathematically extremely complex problems that do not necessarily involve enormous amounts of data. A good example is molecular simulation. Even molecules consisting of only a few dozen atoms can no longer be simulated exactly on classical supercomputers because the underlying quantum physics becomes too complex. This is precisely where quantum computers can play to their strengths. That is why we currently see many applications in materials science, chemistry and fundamental research.

Looking at IQM's roadmap, what problems will quantum computers be able to solve over the next five years that are not possible today?

Quantum computing is developing in much the same way as the traditional semiconductor industry. There will not be a single day on which suddenly everything becomes possible. Instead, performance will improve year after year. We expect the first applications to emerge in quantum simulation. This involves using quantum computers to simulate other quantum systems, such as molecules or new materials. For example, we are working with Volkswagen on the development of better batteries. Similar applications exist in aerospace, advanced materials and fertilizer development. A second major field is optimization. Every industry

faces such challenges. Logistics companies want to optimize supply chains, financial institutions want to make better predictions, and transportation networks seek to operate more efficiently. As computing power increases, the problems that can be tackled become larger and more complex. The third field is artificial intelligence. Here we see a very exciting interplay. We already use machine-learning methods in the development of our quantum computers. Conversely, quantum computers may in the future accelerate certain AI algorithms. Both technologies will drive each other forward.

Do you have a sense of where the first truly economically transformative application might emerge?

Let us consider the pharmaceutical industry. Every year, hundreds of billions are invested in the development of new drugs. If quantum computers can accelerate or make this development process more efficient, the economic value created will be enormous. That does not mean that money will immediately appear in a company's bank account after a quantum-computing run. The value arises because companies can conduct research faster, make better decisions and shorten their development cycles.

Future quantum computers could break today's encryption systems and thereby threaten internet security. Security experts point out, however, that quantum-safe encryption methods already exist today. Does that ease the situation?

Fundamentally, that is correct. Quantum-safe encryption systems already exist today. Our business model is not based on breaking encryption either. That would not be a particularly positive use case. The real challenge is a

different one: large organizations require a long time to transition. Banks, government authorities and operators of critical infrastructure cannot replace their systems overnight. Many encryption methods are deeply embedded in existing systems. Some of these systems have been in operation for decades. That is why migration must happen faster than the development of quantum hardware.

Doesn't that still suggest a certain sense of urgency?

Yes, and that urgency stems primarily from what is known as the "store now, decrypt later" problem. Encrypted data can already be intercepted and stored today. Nobody has to decrypt it immediately. It can simply be stored on a server and left there. If sufficiently powerful quantum computers become available in five, ten or fifteen years, that data could then become readable retrospectively. And one can assume that among it will be information that is still valuable or sensitive at that point in time. That is why we need to act now. Not because all encryption will be broken tomorrow, but because the data we send today could potentially be exposed in the future.

What does that mean in practical terms for companies?

They should establish and implement a concrete migration plan. The new quantum-safe methods have already been selected by the U.S. National Institute of Standards and Technology. There are now also numerous consulting firms helping organizations with the transition. Many companies have already embarked on this path. We can see this among messaging services and major technology companies. The direction is clear. The challenge lies in carrying



“Only when we have strong domestic solutions in critical technologies can we truly make free choices.”

Jan Goetz

out the migration consistently.

In other words: even if there is no need to panic, organizations should act strategically now.

Exactly. Anyone responsible for long-term systems should begin transitioning to quantum-safe methods today.

What role does quantum computing play with regard to Europe’s technological sovereignty?

A very significant one. Quantum computers represent a new computing technology capable of solving problems that cannot be solved with today’s systems. Many of these problems are of economic, security and geopolitical importance. We can currently see very clearly in the field of AI what happens when critical technologies are controlled by only a handful of providers in a single country. If, for whatever reason, those providers are no longer able to deliver, entire regions can suddenly find themselves without access to critical computing capabilities.

What does sovereignty mean to you?

The term is often misunderstood. Sovereignty does not mean having to manufacture everything yourself or isolating yourself from the world. To me, sovereignty means being able to choose from a position of strength. Europe has lost that position in many key technologies. That is why it is not enough to say that in the future we will simply stop buying from this or that supplier. We need to develop our own alternatives that are technologically competitive.

Only when we have strong domestic solutions in critical technologies can we truly make free choices. Sovereignty is therefore not created through isolation, but through freedom of choice.

Where do you currently see the strongest competition for IQM? And how do you position yourselves against the major American and Chinese players?

The two most important blocs are clearly the United States and China, although their dynamics are very different. China is largely decoupled from us. Quantum computing is subject to export controls, which means we cannot conduct business there anyway. Naturally, we watch developments there closely. The technological progress is highly impressive. But the markets are currently very separate.

The situation with the United States is different. There is competition, but there are also partnerships. For example, our systems include components from the United States, particularly in the area of high-speed electronics. At the same time, we ourselves want to succeed in the American market. That is why I do not believe isolation is the right answer. What matters is developing competitive products.

And are you already succeeding in doing that?

Yes. We have installed a quantum computer at Oak Ridge National Laboratory, one of the largest computing centres in the world. It is an environment in which virtually all major American technology

companies are active and developing their own quantum computers. Being successful there as a European company demonstrates that it is possible.

Is this also a question of mindset?

Absolutely. We need more of a winning mindset in Europe. American companies say with great confidence: this is a critical technology, and we are going to win. In Europe, we often spend a great deal of time discussing the reasons why something might not work.

So you want to win?

Of course. Sometimes that sounds slightly unusual when expressed by a European. Yet nobody goes into a football match expecting to lose. I know the technological challenges extremely well. I know how difficult all of this is. But if you do not enter the field with the ambition to succeed, you certainly will not succeed.

Quantum computing is considered a critical, security-relevant technology. What difference does that make for a company like IQM?

A very significant difference. We are not selling ice cream in the town square. We develop critical technology. That affects virtually every area of the company. It starts with the people we hire and extends to background checks and the question of which investors we can accept. We also have to examine very carefully who is allowed to acquire ownership stakes in the company. The same applies to customers and partners.

>

What does that look like in practice?

We conduct very thorough know-your-customer checks. We want to ensure that our technology does not end up, through indirect channels, in the hands of organizations that should not have access to it. We are equally careful when it comes to partnerships and examine very closely whom we choose to work with. In doing so, we maintain close exchanges with government authorities and with advisers who support us on these issues. In this environment, one simply has to proceed with great care.

Do you sometimes perceive these restrictions as a burden?

Not really. On the contrary. I actually believe that such requirements can improve the quality of a company. Start-ups in particular often have a tendency to pursue every opportunity that presents itself. You say yes to everything because you are not yet entirely sure where the journey is heading. However, when you are forced to make more conscious decisions about whom you work with and which partnerships you enter into, it ultimately improves the quality of the business. It leads to more strategic thinking and more sustainable growth.

What question should companies be asking themselves today when they think about a future with quantum computers?

Essentially, every company should ask which business processes could benefit from quantum computers in the future. We assume that virtually every industry will be affected. And in a positive way. We know from many previous technological waves that there is often a first-mover advantage. Companies that understand early on how a new technology works and how it can be applied gain a long-term advantage. Artificial intelligence is a good example of this. That is why it already makes sense today to engage with quantum computing.

What does that look like in practice?

Many companies are now establishing small internal teams to explore precisely these questions. They analyse which business processes may change in the future and how quantum computers could be integrated into existing workflows.

Together with these companies, we then conduct pilot projects. For example, we are working with Volkswagen on battery technologies, with Siemens on optimizing production processes, with Infineon on logistics workflows in a factory, and with an insurance company on fraud detection. Such projects help companies understand what is already possible today and how far the road to productive deployment still is.

How important is communication in this context? You are now highly visible in the**public sphere as a scientist.**

Public perception of quantum computing currently ranges from one extreme to the other. Some decision-makers still regard it as a purely theoretical topic for the future. When I tell them that we already operate a factory and have sold 23 quantum computers, many are surprised. On the other hand, there are people who engage very deeply with the topic and strongly believe in the technology.

How do you build trust in a technology that still seems highly abstract to many people?

Every new technology is initially met with a degree of scepticism. That is entirely normal and often even healthy. The task is to demonstrate that quantum computing is real, that it offers tangible benefits, and that it is not some form of black magic or technological hocus-pocus.

Ultimately, this can only be achieved through continuous communication and through practical applications that make the benefits visible.

You see yourself as a scientist. At the same time, you lead a company and increasingly serve as a public communicator. How do you experience these different roles?

Naturally, one operates within a certain field of tension. We face high expectations from governments, investors, >

“We face high expectations from governments, investors, customers and employees.”

Jan Goetz

customers and employees. My personal aspiration is to tell the same story everywhere. I do not want to tell the engineering team one thing and investors another. Authenticity is important to me. It makes many things easier.

What do you find most challenging about this role?

You have many different stakeholders and are constantly on the move. This week, for example, I attended an event with Emmanuel Macron in Versailles. Those are impressive encounters and they provide a great deal of energy. At the same time, there are, of course, the everyday challenges of running a company. Not every team functions smoothly all the time. There are conflicts, difficult decisions and moments when you think: not again.

What are the moments that make you happiest?

When you see something working. When a customer is enthusiastic. When a partnership is formed. Or when a team solves a difficult problem together. Like everyone else, there are highs and lows in this role. But it is precisely this combination that ultimately makes the work exciting. ■

The Geopolitics of Cyber

Cybersecurity is no longer merely an IT issue. It has become a question of strategic capability. Those who control AI models, cloud infrastructures, and digital supply chains control key foundations of economic competitiveness and national security.

Every 39 seconds: This is how often corporate security infrastructures are targeted by attackers.

€202.4 billion: The estimated cost of cybercrime in Germany in 2025.

US\$425 billion: The projected size of the global cybersecurity market by 2030.

Cyberspace is increasingly becoming an arena of geopolitical rivalry. This includes access to so-called frontier AI models such as Anthropic's "Claude Mythos." Owing to their advanced capabilities, such systems can be used to identify and immediately exploit vulnerabilities in critical infrastructure. When Anthropic first made the model available to a select group of companies and institutions, not a single European organization was among them. What appears to be a business decision thus becomes a question of geopolitical power – and reveals who currently holds control in the digital domain.

If AI is the new electricity, the lights are on in the United States while Europe remains in semi-darkness. The numbers tell a clear story: in 2025, 59 of the world's leading AI models originated in the United States, while only two came from Europe. Since early June, Project Glasswing has also enabled selected European actors, including the European Union Agency for Cybersecurity (ENISA), to access "Claude Mythos." Yet the strategic advantage conferred by early and exclusive access to the most powerful AI systems endures. It shapes industrial competitiveness, security architectures, and strategic judgement. Those who control access do not merely determine the rules of the global digital economy; they also define the room for manoeuvre available to other states. >

TEXT_ Timo Blenk, Elisabeth Essbaumer, Christina Schäfer

Dr. Timo Blenk is Senior Partner and CEO of Agora Strategy Group AG, the geopolitical strategy consultancy that emerged from the Munich Security Conference. A specialist in geopolitics, he advises industrial companies on global trends, market entry strategies, and the optimization of procurement and production architectures.

Dr. Elisabeth Essbaumer is Senior Manager at Agora Strategy Group AG, Germany's leading geopolitical strategy consultancy, which originated from the Munich Security Conference. She advises international clients on geopolitical risk and cybersecurity. An economist by training, she previously conducted research at the University of St. Gallen (HSG) and co-founded a digital co-working platform.

Christina Schäfer is Senior Consultant and Chief of Staff at Agora Strategy Group AG. She supports companies in strengthening geopolitical resilience across supply chains and business models. Previously, she worked in risk consulting at PwC and at the German Federal Foreign Office. She studied at Sciences Po Paris.



Leading AI Models Predominantly Come from the United States

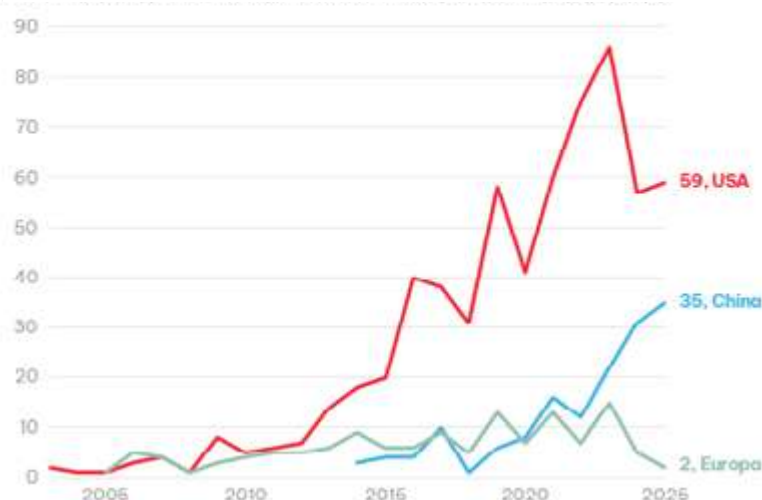


Illustration 1: Number of highly influential AI models by country, 2003–2025

THE MYTH OF A NEUTRAL INTERNET

For a long time, the internet was portrayed as an open space: borderless, decentralized, democratizing, and free from state control. Today, that image has proven to be a myth. The digital realm is not a neutral space. It, too, has a geography, owners, chokepoints, and political protectors. Submarine cables run through sovereign coastal waters, data centres are located on national territory and therefore subject to national laws, and semiconductor production depends on supply chains concentrated in a small number of locations across East Asia and the United States.

As a result, platforms do not operate within a “neutral” internet. They follow the rules of their countries of origin and the interests of their owners. Cyberspace has long since acquired geopolitical borders. This is particularly evident in the “regionalization of the internet.” China’s Great Firewall, which blocks access to thousands of websites and filters politically undesirable content, stands as a prominent example of the fragmentation of what was once conceived as a global internet into national and regional spheres. The digital realm is therefore no longer merely a technical infrastructure project; its architecture has become an expression of geopolitical power structures.

Digital power is not an abstract concept. It manifests itself across multiple layers: from raw materials and energy, semiconductors, data centres, submarine cables and satellite communications to operating systems, software supply chains, security ar-

KEY MESSAGES

- **Digital power** is created through control over AI, semiconductors, cloud infrastructures, data, and energy.
- **The internet** is no longer a neutral space but an expression of geopolitical power relations.
- **Europe** remains dependent on the United States and China in key digital technologies.
- **AI is accelerating cyber conflict** and making speed, computing power, and access to data strategic assets.
- **Digital sovereignty** does not mean autarky; it means choice, resilience, and the capacity to act.

chitectures and AI models. Those who control these layers determine the conditions under which others conduct business and operate. Digital power therefore plays a decisive role in both industrial competitiveness and security, affecting companies and states alike.

This multilayered structure of digital power is particularly visible in the strategic competition between the United States and China. Today, the United States dominates large parts of the global digital infrastructure. Cloud platforms, AI development, the platform economy, venture capital, and significant segments of the cybersecurity industry remain firmly in American hands. At the same time, China is building its own digital ecosystem, based on domestic hardware, strict data controls, and national platforms. A highly interventionist industrial policy is deliberately driving this development forward, with the explicit objective of achieving technological independence from the United States.

This raises the question of whether the United States can maintain its technological leadership over the long term. A look at developments since the early 2000s reveals a clear pattern: while the United States initially held a substantial lead in many cutting-edge technologies, sustained Chinese investments in fundamental research gradually closed the gap and, in numerous fields, surpassed it. According to the Critical Technology Tracker of the Australian Strategic Policy Institute (ASPI), China now leads in 66 of the 74 critical technologies assessed, while the United States retains the leading position in only the remaining eight.

Where does Europe stand in this increasingly bipolar landscape? The continent undoubtedly possesses significant strengths: a large single market, a highly capable industrial base, world-class research institutions and universities, and a number of technological champions. Yet Europe has so far struggled to translate these advantages into technological leadership and digital sovereignty. Despite the common market, the digital landscape remains highly fragmented. Complex regulation, differing national standards, and lengthy procedures continue to constrain scale and speed. Added to this are structural shortcomings in access to capital. Large financing rounds and growth-intensive scaling phases can still be realized almost exclusively in the United States, prompting many promising deep-tech and cybersecurity start-ups with substantial capital requirements to shift their centre of gravity there.

As a result, Europe remains dependent in many key areas of digital infrastructure on systems that it neither owns nor fully controls. Yet cybersecurity begins much earlier than the deployment of security tools. It starts with procurement and stan-

dard-setting, extends through supply chains and computing capacity, and ultimately depends on the ability to understand and operate critical systems within one's own legal and governance framework.

There is also another factor that is often underestimated: energy. Digital power requires electricity. Any country seeking to secure data sovereignty through domestic data centres must have access to vast amounts of energy. Accordingly, major U.S. technology companies such as Microsoft, Amazon, Google and Meta are investing increasingly in energy supply, including through long-term power purchase agreements and stakes in power generation assets, including nuclear energy projects.

According to estimates by the International Energy Agency (IEA), the global electricity consumption of data centres is expected to more than double by 2030, reaching approximately 900 to 950 terawatt-hours annually – roughly equivalent to Japan's total electricity consumption today. As AI-optimized data centres continue to expand and quantum computing moves closer to commercial viability, energy demand is likely to increase even further. Energy policy is therefore becoming a central question of power within cyber geopolitics and digital sovereignty.

Data Center Electricity Consumption by Region, 2020–2030



International Energy Agency (2025), Energy and AI, IEA, Paris; authors' own illustration.

ATTACKS REVEAL WHERE DEPENDENCE BECOMES VULNERABILITY

Ransomware, economic espionage, sabotage, disinformation campaigns, and supply-chain attacks expose systemic weaknesses. They reveal where systems are insufficiently protected, structurally dependent, or poorly prepared. Particularly critical are those areas where digital and physical infrastructure intersect: energy and water supply systems, ports, rail networks, tele- >

communications, satellite systems, and data centres. In these sectors, digital attacks can trigger immediate physical consequences.

The new frontline runs through server rooms, control centres, cloud contracts, and industrial control systems. It remains largely invisible, yet its impact is profound. Cyberattacks have therefore become a stress test of state capacity. The more frequently attacks succeed, the more visible the inability of governments to cope with this new form of vulnerability becomes.

AI IS FUNDAMENTALLY CHANGING DEFENCE

Artificial intelligence is dramatically accelerating the dynamics of both attack and defence. It lowers the cost and expertise required to conduct highly sophisticated attacks while simultaneously increasing their speed and scalability. Frontier AI models are increasingly being used to develop zero-day exploits within very short timeframes – that is, attacks targeting previously unknown or unpatched vulnerabilities for which no security update exists.

In May 2026, Google's Threat Intelligence Group reported for the first time on a zero-day exploit that was highly likely to have been developed with the assistance of an AI model. A prominent cybercrime actor used an AI-generated Python exploit to bypass two-factor authentication within a short period of time before Google and the affected vendor were able to stop the attack.

Cyberattacks against critical infrastructure frequently occur within the context of existing political and military conflicts. Rather than replacing conventional conflict, they complement and accompany it. Databases such as the European Repository of Cyber Incidents (EuRepoC) show that since early 2023 at least 147 politically motivated cyber incidents have been directly linked to the Russia–Ukraine war. This demonstrates that a significant share of documented cyber activity is embedded in geopolitical conflicts, even if only a fraction of these operations becomes publicly visible. Critical infrastructure is a particularly common target. According to EuRepoC, healthcare, financial services, and telecommunications are among the sectors most frequently affected.

At the same time, attribution remains difficult in almost all cases. Only a very small minority of incidents can be traced with sufficient certainty to determine from which country an attack was directed and whether responsibility lies with state agencies, state-affiliated groups, or purely private actors. Where attribution is possible, EuRepoC data and other analyses most frequently point to actors linked to Russia, China, North Korea, or Iran. At the same time, these cases demonstrate how systematically such

states rely on proxy structures and hybrid constellations of private and state-supported actors in order to obscure responsibility.

Overall, an AI-driven arms race is emerging that fundamentally alters the dynamics of cyber conflict. Attackers use artificial intelligence to identify and exploit vulnerabilities more quickly and systematically, while security providers deploy AI-enabled systems that detect and contain threats in real time. As a result, competition is increasingly shifting toward speed, computing power, and access to data. Those who hold an advantage in these areas can not only defend against attacks more effectively but also exert significant influence over the escalation dynamics of cyber conflict.

COMPANIES ARE BECOMING GEOPOLITICAL ACTORS

In cyberspace, companies increasingly make decisions with direct foreign-policy and security implications. They control access to technological capabilities, establish platform rules, and effectively determine which vulnerabilities are addressed and which remain unresolved. This is fundamentally reshaping the distribution of power.

Whereas in the industrial age states controlled ports, pipelines, power grids, and airspace, control in the digital age increasingly rests with companies that own and operate key infrastructures such as AI models, data centres, software supply chains, and security update mechanisms.

Anthropic decides who gains access to “Claude Mythos” and under what conditions. As a result, corporate access decisions become a matter of national security. On 8 April 2026, U.S. Treasury Secretary Scott Bessent and Federal Reserve Chair Jerome Powell urgently summoned the CEOs of several systemically important banks – including Bank of America, Citi, Wells Fargo, and Goldman Sachs – to Washington in order to brief them on the cybersecurity risks associated with the model.

Prior to that, the U.S. Department of Defense had classified Anthropic as a risk factor for security-critical IT supply chains as part of an internal assessment. This assessment occurred against the backdrop of earlier disputes regarding usage restrictions in previous model versions, in which certain military applications had been excluded.

This situation illustrates the degree of leverage a single company can now exert over security-relevant infrastructure and software supply chains. The same model can strengthen defensive capabilities – for example through faster vulnerability analysis – while at the same time making offensive operations significantly easier. >

By controlling through Project Glasswing which states, banks, or infrastructure operators receive access to “Claude Mythos,” Anthropic is effectively assuming a geopolitical role. Although it remains a private-sector actor, its decisions regarding access, security, and export controls have immediate foreign-policy and security implications. Companies may not act politically in the traditional sense, but their product and governance decisions increasingly shape the rules of digital power.

EUROPEAN SOVEREIGNTY MEANS OPTIONS

Digital sovereignty does not mean autarky. Europe does not need to develop every model, every chip, every platform, and every cloud service itself. What sovereignty requires is the ability to choose. Alternative supply chains and technical redundancies ensure that neither disruptions nor political decisions in Washington or Beijing immediately trigger systemic crises or cause large-scale economic damage. Achieving this requires a clear understanding of which dependencies are consciously accepted and which would become unacceptable in a crisis.

Where public procurement continues to prioritize price and convenience over security, transparency, and resilience, existing vulnerabilities are not reduced but systematically reinforced. In practice, this means keeping three dimensions firmly in view.

First, data sovereignty. The crucial question is not merely where data is stored securely, but who actually has access to it and under what legal and technical conditions.

Second, operational control. Who controls hardware access, delivers updates, and possesses the ability to block, alter, or shut down systems in an emergency?

Third, the structure of mutual dependencies. Europe is not merely a consumer; in certain fields it is itself indispensable. SAP, Europe’s largest software company, provides mission-critical systems to the U.S. government, demonstrating that dependencies are not a one-way street.

RECOMMENDATIONS FOR BUSINESSES

Cybersecurity is no longer a purely technical issue. It has become a core component of corporate strategy. In an increasingly volatile threat environment, companies must align security and data-protection measures consistently with their actual vulnerabilities.

Cybercrime already causes enormous economic damage today. According to Cybersecurity Ventures, global cybercrime costs are expected to reach approximately US\$10.8 trillion in 2026, up from roughly US\$3 trillion in 2015. This makes cybercrime one of the largest transfers of wealth in history.

The challenge now is to translate these insights into practical priorities:

1 ■ Conduct a Systematic Analysis of Critical Dependencies

Companies should comprehensively map their dependencies. Which cloud providers, security solutions, AI models, and supply chains are business-critical? Where would an outage or political instrumentalization have an immediate impact on operations? The goal is transparency regarding vulnerabilities and strategic risks.

2 ■ Build Resilience into Architecture and Procurement

Procurement, IT architecture, and location decisions should be evaluated through a resilience lens. This includes second-source strategies, exit options, and alternative suppliers, as well as modular architectures that allow systems to be switched gradually when necessary.

3 ■ Develop Internal Defence Capabilities

Companies must actively assume their role in cyber defence. This includes building AI-supported defensive capabilities as well as establishing clear crisis-management procedures. Since much of the operational expertise resides in the private sector, the ability to respond rapidly has become a security-relevant capability in its own right.

4 ■ Integrate into Cooperative Security Structures

Resilience is not built in isolation but through cooperation between business and government. Strong collaboration is essential: among companies, between industry and public authorities, and within international alliances such as NATO.

A large share of operational cyber expertise resides in the private sector and represents a critical source of knowledge and capability for governments. Companies should embrace this role, actively participate in sectoral and national cybersecurity structures, and contribute to the development of common standards.

Those who continue to treat cybersecurity as a downstream IT function underestimate its strategic significance. In a world where digital systems, geopolitical power, and economic success are increasingly intertwined, security becomes a prerequisite for competitiveness – and a foundation for both corporate and state capacity to act. ■

“Mythos Was a Shock for Beijing”

The “Mythos moment” demonstrates how closely cybersecurity, artificial intelligence, geopolitical power, and technological sovereignty have become intertwined. British intelligence and cybersecurity expert Marcus Willett argues for strategic thinking rather than panic.

Marcus Willett, many observers described the recent “Mythos moment” as a potential turning point for cybersecurity. Were you surprised by it?

Marcus Willett: Not entirely. Frontier AI has been moving in this direction for some time. Mythos is the latest example, alongside systems like OpenAI's newer models, but it is part of a broader progression rather than a sudden rupture. What impressed experts most was not that Mythos could identify vulnerabilities, because many of those vulnerabilities were already known, but the speed and scale at which it could expose them. That changes the pressure on organisations dramatically. The challenge is no longer simply knowing what needs to be fixed. It is whether institutions can patch systems

quickly enough before the weaknesses are exposed to and exploited by hostile actors.

So would you describe Mythos as an evolution rather than a fundamentally new strategic category?

Yes, though a very important evolution. I do not think it overturns the underlying logic of cybersecurity. The basic protective measures still matter. Good network hygiene, patching, segmentation, all of that remains essential. What Mythos demonstrates is that these measures now have to happen much faster. AI accelerates the entire cycle. At the same time, people should avoid reducing this to a simple offensive story. Frontier AI will help attackers, certainly, but it will also strengthen defence. Experts already say AI-gen-



INTERVIEW_ **Marcus Willett**

Marcus Willett (CB, OBE) is a Senior Adviser at the International Institute for Strategic Studies (IISS). Prior to joining the IISS, he spent 33 years at the UK Government Communications Headquarters (GCHQ), most recently serving as Deputy Director with personal responsibility for intelligence collection and cyber operations. Earlier, he was GCHQ's first Cyber Director and led the UK National Offensive Cyber Programme. In 2024, he published *Cyber Operations and their Responsible Use*.

KEY MESSAGES

- **Frontier AI** dramatically accelerates the cycle of cybersecurity.
- **Bad Actors** will have access to models with advanced cyber capabilities.
- **The “Mythos moment”** suggests that the US continues to hold a significant technological lead.
- **Europe's weakness** lies in its ability to scale technological innovation.
- **Strategic autonomy** means to secure sovereign control where required, while cooperating wherever possible.

erated code is less buggy than human-written code. Over time, that could reduce vulnerabilities in newly written software. The unresolved question is how effective AI will become in repairing weaknesses in older code bases. Opinions on that are still divided, although capabilities are improving quickly.

What happens if systems like Mythos make advanced offensive capabilities accessible even to non-experts?

The capabilities available to non-state actors have already been increasing steadily for years. Criminal groups, hacktivists and others can buy sophisticated tools and services on the dark web. They have long been using AI for phishing, malware development and operational support.

What Mythos represents is another jump in scale and speed. The actors themselves may not yet have access to systems of that sophistication, but eventually they will. That is why Anthropic acted cautiously in slowing distribution. And it is also why, if reports are correct, agencies like the NSA are scrutinising Mythos very closely right now.

Why would intelligence agencies be particularly concerned?

Because systems like Mythos may expose vulnerabilities that intelligence agencies themselves rely on operationally in support of vital national security. Historically, agencies have discovered so-called zero-days and sometimes kept a very small number of them secret for such intelligence purposes but only provided the impact on network security can be appropriately managed (so definitely not the unthinking hoarding of copious zero days that is sometimes alleged in the press).

We have already seen what can happen when such vulnerabilities escape into the wild. The North Korean WannaCry and Russian NotPetya hacks were both linked to vulnerabilities that had been discovered, held and lost by NSA. Now imagine a system capable of identifying vulnerabilities at such enormous scale that there is potentially no hiding place for the very few used for vital national security purposes. That potentially changes the operational environment for intelligence agencies as well.

“Systems like Mythos may expose vulnerabilities that intelligence agencies themselves rely on operationally.”

Marcus Willett

What should policymakers and business leaders take away from the „Mythos moment“?

First, they should take it seriously. This is not all hype. The capability increase is real. But second, they should stay balanced. Mythos does not invalidate existing cybersecurity principles. It reinforces them. The difference is that speed and scale are now decisive factors. More broadly, this fits into a larger

strategic context. We are entering a period in which technological dependence, alliance reliability and resilience all become more uncertain. That is why Europe needs to think much harder about its own strategic capacity in areas like AI and cyber defence.

The really interesting thing is what Mythos reveals about the global balance of digital-technological power, especially between the United States and China. Reading between the lines, I think this was probably a shock for Beijing. China made a great deal of noise about its own AI models, but Mythos suggests the leading American firms may still be significantly ahead. For me, that is the “mythos moment”.

So Mythos is not just a cybersecurity story, but also a geopolitical signal?

Exactly. It tells us something about the wider technological ecosystem. AI does not exist in digital isolation. If you add in – for example – hyperscale cloud infrastructure, , geospatial satellites, advanced semiconductors – and you look at who leads on those areas, the United States has enormous structural advantages.

That raises interesting questions about how Washington and Beijing may eventually cooperate or compete over AI governance. I would have loved to have been a fly on the wall during conversations between Trump and Xi about guardrails and strategic control over advanced AI systems.

Where does Europe fit into this picture?

Europe actually has many of the ingredients it needs. In fields like quantum technology, AI research or advanced science more broadly, European countries, including the UK, are extremely strong academically. Around UK universities such as Oxford and Cambridge, >

you see impressive startup ecosystems emerging.

The problem comes later. While Europe is very good at the relevant science, R&D and early innovation, the United States is much better at scaling. American investors are more willing to take risks and place very large bets on emerging technologies. That is how startups become hyperscalers or global platforms.

In the UK, we repeatedly reach the stage where promising companies are sold to overseas firms. ARM, DeepMind, and now Oxford Ionics in quantum all spring to mind, even though they remain UK-based and ostensibly national capabilities. The strategic issue is the inability to build on our scientific and research strength and sustain large-scale national investment long enough to build global technology leaders the way the US and Chinese have.

Does that make Europe dangerously dependent on the United States in cybersecurity?

There is certainly a broader dependence on US technology. But I think the debate is sometimes framed too simplistically. The question is not whether every piece of technology must be nationally owned. The question is whether you can maintain sovereign control over critical systems even when using non-national technology.

And in many cases, you can. You can architect systems in ways that ensure national oversight, national control of data and restricted access, even if parts of the infrastructure rely on American cloud hyperscalers or cybersecurity providers. Ideally, that architecture might also demonstrate to your ally mutual dependence for respective national security and defence reasons.

So the real strategic question on digital sovereignty is much more restricted: where do we genuinely require full independence? One example might be military targeting relying on satellite infrastructure. If a European country worries that the US might withhold support during a crisis, then independent positioning or guidance capabilities become strategically necessary.

So strategic autonomy should not mean cutting off US technology completely?

No, I think that would be a mistake. The smarter approach is risk management, not risk avoidance. Europe should absolutely invest in its own long-term capabilities so that in five or ten years the balance looks healthier. But in the meantime, it would make little sense to exclude American technology entirely from defence, cybersecurity or critical infrastructure.

The French understood some of this earlier than others. They invested seriously in strategic autonomy where it mattered most. Europe now needs a similarly pragmatic approach: cooperate where possible, retain sovereign control where necessary, and become much more willing to invest at scale in its own technological future.

When it comes to advanced AI systems like Mythos, how much should governments trust private companies to act responsibly?

That is becoming one of the central strategic questions. Interestingly, in this case Anthropic positioned itself as a responsible actor by keeping a tight hold of Mythos once it realised what it could do. Anthropic has also looked for guardrails regarding the use of its AI for autonomous weapons or surveillance. That is quite a reversal from the usual assumption that governments are

cautious and tech firms are disruptive. But the deeper issue remains unresolved. During the war in Ukraine, for example, we saw how heavily Ukraine has relied on American hyperscalers and private technology companies for cybersecurity, situational awareness and cloud infrastructure. European governments are now understandably asking themselves whether, in a future conflict, they might also be highly dependent on US firms and wondering what that might mean for them.

Is that dependence uncomfortable for governments?

Very much so, including for the American government. Governments are comfortable when the interests of companies align with national strategy. The problem arises when private executives effectively decide what governments can or cannot do on things that governments view as their preserve, like national security and defence.

You saw that debate around the use of Google and Anthropic in the US and also the use of Starlink in Ukraine. At some point, you have private companies making decisions with enormous geopolitical consequences. Democratic governments cannot simply outsource those judgments to corporate leadership or shareholder interests.

Does that mean stronger regulation is inevitable?

Regulation may become necessary in some areas, but I would be cautious. In cybersecurity, regulation is usually seen as a tool of last resort. Once governments regulate, they also absorb responsibility for the risk. Companies can then say: "We complied with the rules, so don't blame us when something goes wrong." What often happens is that organisations become ob-

sessed with compliance rather than security itself. They focus on ticking boxes instead of thinking seriously about emerging risks. I have seen this repeatedly in cybersecurity. Compliance frameworks rarely cover everything that actually matters. And there is another dilemma. The American argument is that heavy regulation could slow innovation and allow China to overtake the US technologically. Europe, fairly or unfairly, is often criticised for instinctively responding to new technologies through regulation first. The United States tends to innovate first and worry about guardrails later.

Coming back to cyber threats: How do you assess the cyber capabilities of major adversaries like China, Russia and Iran?

China is clearly the most sophisticated of the three. Operations like Volt Typhoon demonstrated tradecraft at a level comparable to the most advanced Western capabilities. That was a very serious signal.

Russia is bold, operationally experienced and has a highly IT-literate population. But I would still place it somewhat below China in sophistication. Iran tends to appropriate tools and techniques developed elsewhere and use them aggressively. It is dangerous, but significantly outmatched by Israel in cyber capability. What makes Iran interesting strategically is that cyberspace gives it reach it otherwise would not have. Iran cannot realistically strike deep into the US homeland militarily. But it can target American critical infrastructure through cyber operations. Even if the effects are limited, that still affects perceptions of security.

If you were still running offensive cyber operations, would you put your best hackers up against systems like Mythos?

Absolutely, but I would not think of it as humans versus AI. The real capability comes from combining the two. AI is exceptionally good at speed, scale and repetitive work. Writing code, analysing huge datasets, identifying patterns, all of that can be automated extremely effectively. What that does is free human operators to focus on the things humans still do best: creativity, lateral thinking - thinking literally 'outside the box'. That is where the real operational advantage emerges. AI handles the drudgery, while human beings concentrate on judgement and imagination. The most effective cyber capability will almost certainly be the human-machine combination.

Could fully autonomous AI attacks eventually move through complex networks faster than human operators?

Eventually perhaps, but not entirely yet. Experiments so far suggest that these systems still require a fair amount of human ingenuity and supervision. AI keeps learning, of course, but there are still important limitations. One problem is contextual understand-

ing. For example, an autonomous system may not reliably distinguish between your own network, neutral networks and the adversary's network in every situation. That creates obvious risks. You would need extremely careful human oversight to prevent unintended consequences during an autonomous cyber operation. Indeed, we have already seen what can happen with self-propagating cyber capabilities like Wannacry and NotPetya, even if AI would undoubtedly be another level in terms of sophistication.

So you do not believe AI replaces human thinking when it comes to cyber operations?

No, quite the opposite. I think people sometimes begin from the wrong premise, the idea that machines will simply take over everything humans currently do. That is not how I see it. Even the most sophisticated systems require a great deal of human guidance and supervision. Governments understand this as well. I have sat in discussions at very senior levels where policymakers from different countries were all grappling with the same concern: nobody really wants conflict to be left entirely to autonomous systems. This is not only a concern of ethicists or humanitarian organisations. Governments themselves are uneasy ethically about the idea of machines operating without meaningful human control.

What is the most important strategic implication of advanced AI?

The first lesson is that now is the time to think strategically. We need to think carefully about what these technologies actually mean rather than reacting emotionally to them. And I would approach this with a degree of optimism. AI will certainly change the labour

“Compliance frameworks rarely cover everything that matters.”

Marcus Willett

market, including white-collar work. But I suspect many jobs will become more interesting rather than less. Humans will spend less time gathering and processing information mechanically and more time on assessment, judgement and decision-making.

Those are precisely the areas where human capabilities matter most.

So yes, I am probably an idealist. But I think frontier AI, if managed properly, has the potential to enhance human life rather than diminish it. Of course bad actors will use it too. That is true of every major technology in history. But that should not blind us to its broader potential.

Given the possibility that we may be entering a more offence-dominant phase in cyberspace because of advanced AI systems, how should societies respond?

I am not entirely convinced that we are entering a permanently offence-dominated era. Mythos has not only exposed vulnerabilities to attackers. It has also allowed companies and governments to identify and patch weaknesses before hostile actors exploit them.

From my own experience, offensive cyber operations are often harder than people assume.

Defence has one disadvantage: defenders have to succeed all the time, whereas attackers only need to succeed once.

That creates the impression that offence is inherently stronger. But my instinct is that frontier AI may ultimately challenge offensive and intelligence operations more than defensive ones.

The key now is not panic. It is strategic thinking. Europe – the UK included – is entering an uncomfortable strategic moment, and we need to think our way through it carefully. ■

The New Digital Arms Race

Artificial intelligence and quantum computing are not merely transforming technologies; they are reshaping the foundations of security, secrecy, and geopolitical power. For Europe, this raises a strategic question: Does it want merely to use these technologies – or to shape and control them itself?

When we speak about cybersecurity today, many people still picture hackers sitting in front of glowing screens or phishing emails arriving in inboxes. This image is not wrong, but it increasingly describes the past. The real revolution is taking place elsewhere. For the first time, digital systems are emerging that can do more than simply execute commands. They are becoming capable of observing, analysing, planning, and acting independently. Artificial intelligence is evolving from an everyday assistant into a cyber actor. For decades, cybersecurity was essentially a race between security researchers and analysts on one side and cybercriminals, intelligence services, and state-sponsored hacker groups on the other. Put simply: humans attacked humans.

FROM HUMAN ATTACKERS TO AUTONOMOUS AGENTS

AI is now driving a paradigm shift. Digital battlefields are increasingly populated by systems capable of making decisions independently. They analyse vast quantities of data, identify patterns, evaluate possible courses of action, and execute complex chains of tasks.

So-called AI agents can scan websites for vulnerabilities, develop malware, and make use of a wide range of external tools. Frameworks such as OpenClaw demonstrate how language models and operating-system access can be combined into agentic systems capable of independently planning and executing complex digital workflows.¹

OpenClaw combines Large Language Models (LLMs) with software tools and is capable of autonomously carrying out multi-stage attack chains. Hermes, an AI-agent framework developed by Nous >

¹ Ying, Z., Yang, X., Wu, S., Song, Y., Qu, Y., Li, H., Li, T., Wang, J., Liu, A., & Liu, X. (2026). *Uncovering security threats and architecting defenses in autonomous agents: A case study of OpenClaw*. arXiv. <https://arxiv.org/abs/2603.12644>

TEXT_ Florian Dalwigk

Florian Dalwigk is an expert in cyber-crime, information security, and digital forensics. After studying computer science, he worked both within a critical infrastructure operator and at the German Federal Intelligence Service (BND). Since 2024, he has served as a volunteer lecturer for the modules Ethical Hacking, IT Forensics, Cyber Espionage, Cyber-crime and Crypto Forensics, and Post-Quantum Cryptography. His new book, "Cyberspionage" (Rheinwerk), is published July 2026.

KEY MESSAGES

- **AI agents** are increasingly capable of independently planning, coordinating, and executing cyberattacks.
- **Systems such as Claude Mythos** demonstrate that AI can now identify previously unknown vulnerabilities and develop complex attack chains.
- **Europe's technological dependence** on a small number of non-European AI providers is increasingly becoming a matter of national and European security.
- **AI is transforming not only cyber operations**, but also intelligence work, disinformation campaigns, and digital influence operations through scalable virtual identities and AI-supported manipulation.
- **The combination of artificial intelligence and quantum computing** could fundamentally reshape existing security architectures.

Research, introduced the concept of “skills.” These can be understood, in simplified terms, as macros that combine multiple individual steps into a reusable capability.

An AI agent might, for example, possess a skill that analyses a website and identifies the technologies operating in the background. Another skill could research known vulnerabilities associated with the identified components. A third skill could exploit the discovered weaknesses, while a fourth generates a report from the results. It is only through the combination of multiple such skills that complex workflows emerge.

Much like Julius Caesar’s principle of *Divide et Impera* – divide and rule – the AI agent first breaks down a complex task into numerous smaller sub-problems. It independently decides which skills are required, in what sequence, and links them into a coherent chain of actions. What makes such agent systems particularly powerful is that they do not merely rely on existing skills. When certain tasks occur repeatedly, they can create and store new skills themselves. In this way, their toolbox expands continuously, and the automation of complex attacks increases with every newly acquired capability.

From Language Models to AI Agents

An LLM serves as the cognitive centre of an agentic system. It processes information, recognises patterns, evaluates options, and develops proposed solutions. An AI agent extends these capabilities by gaining access to external tools and data sources. As a result, it can not only analyse and plan but also execute actions independently. Skills function as reusable capabilities or workflows that combine multiple individual steps into more complex tasks. Advanced agent systems can store, combine, and create such skills themselves, allowing their capabilities to grow continuously.

For Europe, this raises a fundamental strategic question. For many years, technological superiority depended largely on access to highly qualified specialists. Today, however, the ability to conduct complex cyber operations is no longer determined solely by the number of available experts. Increasingly, it depends on access to powerful AI models, computing resources, and the underlying training data.

States and companies that develop or control such systems gain a strategic advantage. The implications for cybersecurity are profound. An AI agent never gets tired. It requires no breaks. It can analyse hundreds of systems simultaneously, process thousands of lines of code, and search for vulnerabilities around the clock.

Where a human analyst might need several days to thoroughly examine a complex application, a network of specialised AI agents could potentially complete the same task within a matter of hours. In doing so, they generally follow the same stages as human attackers along the so-called Cyber Kill Chain. They first gather information about a target, identify potential vulnerabilities, develop suitable attack strategies, and then execute them.

Hacking is often perceived by outsiders as a highly creative discipline. In practice, however, many attacks follow structured methodologies for which extensive expertise, tools, and attack patterns have evolved over decades. AI agents can use the same tools as human attackers – from search engines and vulnerability scanners to password-cracking software. As a result, they are increasingly capable not only of replicating the individual stages of an attack but of executing them far more rapidly and at a much greater scale than any human operator.

WHEN AI DISCOVERS CRITICAL VULNERABILITIES

The Anthropic-developed AI model Claude Mythos demonstrates that AI is now capable not only of exploiting known vulnerabilities but also of independently discovering previously unknown security flaws.

Claude Mythos operates in a domain long believed to be reserved exclusively for human security researchers: the successful identification of new vulnerabilities in complex software systems. According to Anthropic, Claude Mythos succeeded in identifying² several previously unknown vulnerabilities in software projects deployed in production environments.

Among its findings was a 27-year-old security flaw in OpenBSD, an operating system renowned for its rigorous security standards. The model also identified a 16-year-old vulnerability in FFmpeg, one of the world’s most widely used multimedia libraries, along with additional security issues in various security-critical software components. Anthropic further reported that the model was able to combine multiple vulnerabilities and derive functioning exploit chains from them. >

² Anthropic. (2026). *Project Glasswing: Securing critical software for the AI era*. <https://anthropic.com/glasswing>

The development of so-called zero-day exploits for previously unknown vulnerabilities is considered one of the most demanding disciplines in offensive cybersecurity. It is no coincidence that such exploits are sometimes traded on darknet marketplaces for seven-figure sums. For intelligence agencies and state actors, previously unknown vulnerabilities represent a valuable strategic asset because they may enable undetected access to foreign systems. Anyone possessing a working zero-day exploit potentially holds exclusive access to targeted systems.

Europe faces the risk of becoming dependent on a small number of non-European technology providers. If the most capable AI models are developed and controlled outside Europe, there is a long-term danger that critical security-related capabilities will no longer remain in European hands.

The ability to develop, operate, and continuously improve domestic AI models is therefore becoming a matter of national security. Only those who possess the necessary expertise and computing resources can independently determine how these technologies are used and which strategic interests they ultimately serve.

The search for previously unknown vulnerabilities has become, alongside Human Intelligence (HUMINT) – the collection of information through human sources – one of the most important methods intelligence services use to gain access to foreign information systems. For many years, however, the shortage of specialists in exploit development represented a significant bottleneck. As a result, intelligence agencies increasingly relied on intelligence sources and darknet marketplaces to acquire such capabilities.

At first glance, the current advances in AI-powered offensive capabilities appear to offer a strategic advantage. Models such as Claude Mythos can help penetrate adversary systems more discreetly and with greater chances of success, reducing dependence on external providers of exploits and attack capabilities.

THE NEW RACE FOR DIGITAL SUPERIORITY

Yet are we not becoming as dependent on AI providers as intelligence agencies once were on exploit brokers?

Already today, a strong dependence of Western states on a small number of American technology companies is becoming apparent. The most capable AI models currently available origi-

nate almost exclusively from the United States or China, including systems developed by Anthropic, OpenAI, Google, and DeepSeek AI.

The strategic importance of these companies is reflected in their increasingly close cooperation with security and defence institutions. Advanced AI systems are now regarded as security-critical infrastructure.

One example is the cooperation between Anthropic and the U.S. Department of Defense on the responsible use of AI in defence applications.³ This creates a major challenge, particularly for Europe and Western intelligence services. Even if powerful AI models are available, this does not automatically mean they can be safely employed in intelligence operations.

Sensitive target information, operational methods, human sources, and intelligence derived from ongoing investigations cannot simply be transferred to external cloud services. Intelligence agencies therefore depend on systems that can be operated within their own security infrastructure and remain under their direct control.

Moreover, technological advances are not available solely to Western services. Adversarial intelligence agencies, state-sponsored hacker groups, and other actors are investing heavily in comparable capabilities. What initially appears to be a strategic advantage can therefore quickly evolve into a digital arms race. In many respects, this development resembles the arms dynamics of the Cold War. At that time, nuclear weapons, satellites, and reconnaissance systems occupied centre stage. Today, AI systems are increasingly assuming a comparable role.

Whoever possesses more powerful models, can process larger volumes of data, and can identify new vulnerabilities more quickly gains a potentially significant intelligence advantage. The true significance of this development therefore lies not merely in individual vulnerabilities discovered by AI. Rather, it lies in the prospect that capabilities previously reserved for a small number of highly specialised experts can now be automated, scaled, and deployed on a massive scale.

This may well mark the beginning of a new AI-driven arms race in cyberspace. For Europe, this means finding ways to strike a balance between innovation and regulation. Technological influence is not created through rules alone but, above all, through the ability to develop relevant technologies oneself. >

³ Anthropic. (2025). *Anthropic and the Department of Defense to advance responsible AI in defense operations*. <https://www.anthropic.com/news/anthropic-and-the-department-of-defense-to-advance-responsible-ai-in-defense-operations>

WHEN AI AGENTS RECRUIT HUMANS (V-HUMINT)

The impact of AI is not limited to technical reconnaissance or exploit development. Artificial intelligence is also transforming the field of Human Intelligence (HUMINT). Traditionally, HUMINT has relied on building trust, initiating personal relationships, conducting psychological assessments, and managing sources over long periods of time. For decades, these activities were regarded as deeply human capabilities.

Yet parts of these tasks can now be automated or at least significantly enhanced through AI. State actors are already using AI-supported methods to make identities appear more credible, adapt communication styles, and analyse large numbers of potential targets.

North Korea provides a particularly striking example. For several years, security agencies and private companies have reported operations in which North Korean IT specialists successfully obtained positions at Western technology companies under false identities.⁴

Increasingly, these operations employ AI-powered tools, including synthetically generated application documents, manipulated identity credentials, and deepfake avatars used during job interviews.⁵

Amazon has previously reported identifying and blocking thousands of suspicious job applications believed to be linked to North Korean actors. At the same time, Microsoft, the U.S. Department of Justice, and other security agencies have warned that AI significantly increases the credibility of such deception operations.

The capabilities of AI, however, extend far beyond obtaining employment or cultivating human sources. New possibilities are also emerging in the field of influence operations. AI can be used to generate highly convincing texts, images, audio recordings, and videos designed to influence public debate, political decision-making processes, or broader societal narratives.⁶ The growing convergence of AI and digital manipulation presents particular challenges for open societies. Democracies depend on trust in institutions and public communication. As AI-enabled deception operations become increasingly convincing, they create not only security risks but also societal ones.

Resilience against disinformation, deepfakes, and digital influence operations is therefore becoming an increasingly important component of Europe's security architecture. The defence of democratic decision-making processes is increasingly becoming a question of technological competence and societal resilience. In this context, V-HUMINT is assuming a growing role.

From HUMINT to V-HUMINT

HUMINT refers to intelligence collection through human sources. These include informants, trusted contacts, defectors, and other individuals with access to relevant information. *V-HUMINT* (Virtual Human Intelligence) increasingly shifts these activities into digital environments such as social networks and messaging platforms. AI can assist in identifying potential targets, adapting communication styles, and analysing large numbers of contacts simultaneously. In this way, *V-HUMINT* becomes a digital extension of traditional HUMINT methods.

Analogous to the traditional concept of the V-Mann (confidential informant), virtual identities may increasingly be deployed in the future, supported by AI or operated partly autonomously. Where intelligence handlers once depended on face-to-face meetings, travel, and long-term personal relationship-building, recruitment, relationship management, and communication increasingly take place via social media, messaging services, and professional platforms such as LinkedIn. Even relatively simple

“The defence of democratic decision-making processes is becoming an important component for Europe’s security.”

Florian Dalwigk

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⁴ Federal Bureau of Investigation. (2025). *North Korean IT worker threats to U.S. businesses*. Internet Crime Complaint Center. <https://www.ic3.gov/PSA/2025/PSA250723-4>

⁵ Microsoft Threat Intelligence. (2025). *Jasper Sleet: North Korean remote IT workers' evolving tactics to infiltrate organizations*. <https://www.microsoft.com/en-us/security/blog/2025/06/30/jasper-sleet-north-korean-remote-it-workers-evolving-tactics-to-infiltrate-organizations/>

⁶ World Economic Forum. (2025). *The Global Risks Report 2025*. https://reports.weforum.org/docs/WEF_Global_Risks_Report_2025.pdf

language models are capable of analysing communication styles and adapting them to different target individuals.

Tasks that once required the time-consuming work of a human case officer can now be partially automated. The decisive advantage lies in scalability. A human intelligence officer can manage only a limited number of targets simultaneously. AI-supported systems, by contrast, could analyse, prioritise, and assist with the recruitment of hundreds of potential sources in parallel. The real strength of these systems does not lie in replacing human officers entirely, but in acting as force multipliers that allow them to manage far more contacts than ever before.

Yet in intelligence work, the number of contacts is less important than their quality. A high-ranking military attaché, a government adviser, or an insider within a defence contractor may be more valuable to an intelligence service than hundreds of ordinary sources.

It is precisely in the identification of such targets that AI opens up new possibilities. By analysing vast amounts of publicly available information, potential targets can be identified, prioritised, and assessed for their susceptibility to recruitment attempts far more rapidly than before. Factors such as professional position, social environment, financial difficulties, ideological convictions, or personal interests can be analysed automatically and consolidated into a risk profile. From this, tailored approaches for engagement can be developed.

AI therefore helps intelligence services filter out those individuals who appear particularly valuable from among millions of potential targets. At the same time, this development reveals a fundamental shift in the relationship between information and power. The ability to process large volumes of publicly available data and transform them into actionable insights is becoming a strategic resource.

States, corporations, and security agencies increasingly compete for the same raw material: information. The question of who can analyse data and convert it into decisions is becoming almost as important as traditional military capabilities.

STORE NOW, DECRYPT LATER

Alongside artificial intelligence, a second technological transformation is emerging that could fundamentally alter intelligence work and profoundly challenge digital security: quantum computing. While AI primarily increases the speed and scalability of analysis, reconnaissance, and cyber operations, quantum computers threaten another foundation of modern information societies: encryption.

Today, virtually all digital communication relies on cryptographic methods. They protect messaging applications, emails, VPN connections, and countless other systems upon which governments, companies, and individuals depend every day.

For intelligence services, this is particularly important because their work depends on long-term secrecy. The identity of a source, operational methods, technical capabilities, or sensitive communications often need to remain confidential not merely for months or years, but sometimes for decades.

It is precisely here that a new challenge is emerging – one that is often underestimated in public debate. The real threat posed by quantum computers does not begin when they finally arrive on the so-called Q-Day. Intelligence agencies around the world are already collecting vast amounts of encrypted communications under a strategy known as Harvest Now, Decrypt Later (HNDL).

Harvest Now, Decrypt Later (HNDL)

Under the *HNDL* approach, encrypted data are collected and stored today even though they cannot yet be decrypted using currently available technologies. The expectation is that future technological advances – particularly powerful quantum computers – will eventually make decryption possible. For information with a short lifespan, this risk is limited. For intelligence agencies, military organisations, and operators of critical infrastructure, however, it represents a substantial challenge because certain information must remain confidential for decades. The threat posed by quantum computing therefore does not begin on Q-Day. It begins while you are reading this text.

For intelligence services, this creates the prospect of analysing communications intercepted today many years in the future. Yet the same logic also works against their own interests.

Communications that are considered secure today may likewise be exposed in the future. The question is therefore no longer whether a message is securely encrypted today, but whether it will remain protected against retrospective decryption twenty or thirty years from now.

For Europe, this creates immediate pressure to act. While the future capabilities of quantum computers remain uncertain, the costs of delaying migration to quantum-safe cryptography are already foreseeable. The challenge lies in preparing today's security architecture for multiple possible futures. In this context, >

strategic resilience means actively planning for uncertainty. For that reason, the adoption of quantum-safe cryptographic methods as quickly as possible is strongly advisable.

THE CLOCK IS TICKING

The seriousness of this risk is illustrated by a risk model developed by the Canadian mathematician Michele Mosca, commonly known as the Mosca Theorem.⁷

The model considers three time horizons:

- the period for which information must remain confidential,
- the time required to migrate to quantum-safe cryptography,
- and the remaining time until sufficiently powerful quantum computers become available.

If the sum of the required confidentiality period and migration time exceeds the remaining development time of quantum computers, a structural security risk emerges.

For example, if information must remain secret for another twenty years and migration to post-quantum cryptography requires an additional five years, then the mere possibility that a quantum computer capable of breaking current encryption may emerge within the next twenty-five years already creates a problem today. The challenge has therefore already begun. While many corporate data lose their sensitivity after a few years, the identity of a human source, covert operational methods, or international intelligence liaison relationships may remain highly sensitive decades later. Retrospective disclosure could compromise operational capabilities and, in the worst case, endanger human lives.

For European defence institutions, this creates a paradoxical situation. On the one hand, future quantum computers could enable the analysis of previously inaccessible communications archives belonging to foreign states. Historical data repositories could suddenly reveal new insights into political decisions, military operations, or intelligence networks. On the other hand, the same technology threatens the long-term confidentiality of Europe's own operations. Quantum computing therefore does not create a one-sided strategic advantage. Instead, it changes the rules of the game for all participants alike. Much as with artificial intelligence, a quantum arms race is therefore likely to emerge. Governments are already investing billions in quantum computing, quantum-safe cryptography, and related research. >

“Europe’s strategic challenge lies in its ability to manage multiple technological transformations simultaneously. Artificial intelligence, quantum computing, and cybersecurity are increasingly becoming interconnected instruments of power.”

Florian Dalwigk

⁷ Michele Mosca. (2018). *Cybersecurity in an era with quantum computers: Will we be ready?* IEEE Security & Privacy, 16(5), 38–41. <https://doi.org/10.1109/MSP.2018.3761723>

THE INTERACTION BETWEEN AI AND QUANTUM TECHNOLOGIES

The truly transformative aspect lies in the interaction between artificial intelligence and quantum computing. The two technologies target different vulnerabilities within information systems. AI enables the automation of reconnaissance, analysis, and cyber operations. Quantum computers, by contrast, could eventually undermine the cryptographic protections upon which digital communication depends. Put simply, AI may help actors penetrate systems more rapidly, while quantum computing may enable them to exploit data that were previously inaccessible.

The real strategic challenge therefore lies not in either technology individually, but in the combination of both developments. Whether cryptographically relevant quantum computers will emerge within five, ten, or twenty years cannot currently be predicted with confidence. For intelligence services, however, this uncertainty itself constitutes part of the problem.

Anyone responsible for protecting information that must remain secret for decades cannot afford to wait until the technology is fully mature. This is precisely why researchers worldwide are investing heavily in post-quantum cryptography and examining the security implications of the coming quantum era. AI is transforming the way information is collected and processed. The quantum age is challenging the very foundations of digital secrecy.

Europe's strategic challenge lies in its ability to manage multiple technological transformations simultaneously. Artificial intelligence, quantum computing, and cybersecurity are increasingly becoming interconnected instruments of power. The question is no longer merely which technologies Europe uses, but to what extent it succeeds in shaping them itself. Strategic agency in the twenty-first century will increasingly depend on whether Europe merely adapts to technological developments or actively helps define them.

This requires investment in research and development, the cultivation of domestic AI and quantum expertise, and the ability to develop and operate security-critical technologies within Europe. Those who wish to guarantee digital security and preserve technological sovereignty in the future must lay the foundations today. The digital arms race has already begun.

The decisions taken over the coming years will play a decisive role in determining Europe's place within it. ■



Florian Dalwigk
Cyberspionage
 Wie Nachrichtendienste
 um Informationen und
 Kontrolle kämpfen
 Rheinwerk, 2026, €29,90

“Only Humans Can Bear Responsibility”

What happens when cyberattacks can only be detected and repelled by machines? Christian Hummert, Research Director at Germany's Cyber Agency, warns against blind trust in AI and argues for technologies that preserve human control.

Christian Hummert, the new AI model Claude Mythos Preview has caused quite a stir in the cybersecurity community. Germany's Federal Office for Information Security (BSI) even described it as a paradigm shift. Do you agree?

“Paradigm shift” is a big word. To my knowledge, nobody in Europe has actually seen this model yet – that is, in a sense, part of the “myth” surrounding Mythos. Regardless of this specific case, however, it is clear that machine learning can be highly effective in identifying vulnerabilities in software. That has the potential to fundamentally influence cybersecurity. Whether we can truly speak of a disruptive moment, however, remains to be seen.

As Research Director of the Cyber Agency, you recently proposed a paradigm shift of

your own in cybersecurity – from resilience to vigilance. What is the strategic idea behind it?

Resilience has become something of a buzzword. In Germany's current coalition agreement alone, the term appears 27 times. Everything is supposed to become resilient: infrastructure, media, citizens, nature reserves. The problem is that resilience is often conceived in a reactive way. You endure an attack, recover from it, and become somewhat more resilient afterwards. That makes sense, but it is not enough.

If someone breaks into your home, you can install a stronger door. If they break in again, you buy an even stronger one. At some point, however, you have to ask whether that is really the solution. What is often missing, in my view, is the



INTERVIEW_ Christian Hummert

Prof. Dr. Christian Hummert is Research Director and Managing Director of the Agency for Innovation in Cybersecurity GmbH (Cyber Agency). A computer scientist and philosopher, he earned his doctorate from the University of Jena in 2014. He served as an IT forensics expert at the Thuringia State Criminal Police Office (LKA), was Professor of IT Security and Digital Forensics at Mittweida University of Applied Sciences, and headed the Digital Forensics division at ZITIS. He is also an honorary professor in Mittweida and a lecturer at Ludwig Maximilian University (LMU) Munich.

KEY MESSAGES

- **Cybersecurity** requires the early identification and active containment of threats rather than merely reacting to attacks.
- **Human control**, explainability, and accountability must be preserved.
- **Europe's objective** should not be digital autarky, but technological influence and strategic agency in key technologies.
- **Data, industrial expertise and quantum technologies** offer Europe genuine strategic competitive advantages.
- **Future technologies** emerge through long-term investment and a willingness to take risks.

proactive element. I would like to see an approach that looks ahead – one that identifies and shapes risks early rather than merely reacting to them.

What role does artificial intelligence play in this?

The challenge is that modern digital systems have long since become too complex for humans to fully comprehend. Even if I could see all the network traffic of a government agency displayed on my screen, I would not be able to detect a sophisticated cyberattack. No human can do that anymore. That is why we delegate this task to AI systems.

But this creates a philosophical problem. In our system of values, only human beings can bear responsibility. Machines cannot be held responsible, nor can they be held accountable. At the same time, we are increasingly required to trust these systems, even though we often can no longer understand how they arrive at their decisions.

What are the consequences of that?

If we develop technologies that make decisions no human being can understand or control, we gradually surrender human responsibility. We already see examples of this. In China, AI systems are used to prepare judgments in certain civil court proceedings. In Israel, AI systems have reportedly been used to assist with target selection during wartime. In such contexts, the issues at stake are ultimately matters of life and death.

That is why I advocate designing technologies in a way that allows human beings to understand what is happening and to intervene at any time. I call this vigilant technology. This is also why the Mythos debate concerns me. Nobody really knows what this system is capa-

ble of or how it works. Yet it is already being credited with the power to fundamentally change the world. That is a development we should watch very carefully.

If AI automates cyberattacks in the future, won't we only be able to defend ourselves with equally automated cyber defence?

Without AI, it simply will not work. In fact, it hardly works without AI even today. The crucial question, however, is how we design these systems. Do we build them in such a way that humans can still understand what is happening and intervene when necessary? Or do we create systems that require blind trust?

What does vigilance mean in practical terms?

For me, vigilance means more than simply building ever stronger defensive measures. If your house is repeatedly broken into, you can keep buying thicker and thicker doors. At some point, however, you have to ask whether that alone can be the answer.

That is why I support active cyber defence. I do not particularly like the term hack back, however. It sounds like retaliation. I am not interested in revenge; I am interested in stopping threats effectively. If we know where a troll factory is operating that deliberately spreads disinformation, then there should be mechanisms to disrupt that infrastructure. The answer cannot be to explain to every citizen how to identify deepfakes. Nor can we simply accept that cybercriminals are untouchable because they happen to be located abroad.

Do we even have the capabilities in Germany to undertake such measures? And who bears responsibility if something goes wrong?

„I support active cyber defence. I do not particularly like the term hack-back, however. It sounds like retaliation.“

Christian Hummert

To some extent, we do. The Bundeswehr, through its Cyber and Information Domain Service Command, possesses the relevant capabilities and has a clearly defined legal mandate to use them in the context of national and collective defence. Whether additional authorities should be granted such powers is ultimately a matter for legislators to decide.

I can imagine certain security agencies being permitted to use such instruments in clearly defined circumstances. However, I do not support the idea that every police department should be able to conduct its own cyber operations. Germany already has a National Cyber Defence Centre. There is still considerable untapped potential there.

How do you view Europe's technological dependence in this context?

First of all, we have to be honest: Europe is currently neither digitally nor technologically sovereign in the full sense of the term. That does not mean, however, that we should strive for autarky. Nobody wants a completely German computer with a German processor, a German operating system, and German communication services. That would be neither realistic nor desirable. The real question is this: In which key technologies do we have a meaningful voice, and in which do we not? Europe has no relevant search engine, no major social network, and no leading semiconductor industry. As long as we maintain strong positions in other areas, that is manageable. But if we no longer have anything significant to offer at all, we lose our ability to shape developments. That is why Europe needs fields in which it is truly world-class.

How does your concept of vigilance relate to this?

There is a close connection between vigilance and sovereignty. Vigilance means investing today in technologies that may only become decisive ten or fifteen years from now. We are already doing this successfully in the field of quantum technologies. Germany is among the world leaders in this area. Post-quantum cryptography is another good example. We are making encryption more secure today so that it will continue to function in a world shaped by quantum computers.

To me, that is the essence of strategic foresight.

AI is one area where the leading models are overwhelmingly American. Under those circumstances, how can Europe remain sovereign?

We possess something extremely valuable: our data. American companies trained their models on data gathered from the internet. However, the internet also contains a great deal of nonsense. Europe's strength often lies elsewhere. Many small and medium-sized enterprises possess unique knowledge that has been accumulated over decades. I recently visited a company that manufactures clamping systems for milling machines. From the outside, the product appears simple. In reality, it embodies more than a century of experience. That expertise is the real treasure. If such data flow uncontrollably into foreign cloud infrastructures and are then used to train AI systems, we lose part of our value creation. That is why we need sovereign cloud infrastructures and the ability to train AI systems on our own data. Perhaps Europe does not need the largest AI models in the world. Perhaps what we need are highly specialized AI systems that help our companies build better products. From

my perspective, that would be far more important than the next Mythos.

Where, then, should Europe place its strategic focus?

We should play to our strengths. When it comes to artificial intelligence, I sometimes wonder whether the train has already left the station. Spending billions now to develop large AI models that may ultimately still lag behind their American counterparts strikes me as difficult.

There are other technological fields in which Europe – and Germany in particular – already occupies a leading position. Quantum technologies are a good example. In this field, we are among the world leaders. I would caution against neglecting our strong positions merely to chase developments elsewhere. We need to find our own path.

Would you already advise companies to prepare for post-quantum cryptography today?

Prepare, yes. Migrate immediately, no. The standards are only now being certified. Even the BSI has not yet reached a final position. There is still no universally available hardware, and many questions regarding secure implementation remain unresolved.

Companies should, however, begin planning now. The transition will be expensive, complex, and time-consuming. You cannot migrate a few computers while leaving everything else unchanged. Ultimately, the entire IT infrastructure is affected. The difficult part is that, if everything works as intended, nobody sees the success. A CEO is expected to invest millions, and in the end everything functions exactly as it did before. That makes such decisions politically and economically unattractive. >

How confident are you that the technology will actually arrive?

To me, it is a bet worth making. Unlike some other future technologies, we have seen genuine progress in this field for years. And it is important to distinguish between quantum communication, quantum sensing, and quantum computing. They are developing at different speeds. With quantum sensors, we have essentially already arrived. You can buy them today. The technology works.

Quantum communication has also produced successful pilot deployments. And in quantum computing, we are seeing so much progress that I find it difficult to imagine that it will not materialize. The real question is whether it will take five, ten, or fifteen years.

That sounds remarkably optimistic for Germany.

Perhaps we should allow ourselves a little more optimism from time to time. The second most valuable company in the quantum sector is based in Germany. At the same time, we continue to see European technology companies being acquired by American corporations. I consider that problematic.

More importantly, Germany has repeatedly underestimated its own technological opportunities. There are numerous examples of innovations in which we were early pioneers, only to leave the resulting value creation to others. That is why we should not focus exclusively on everything that does not work. We should also be willing to believe in technologies and invest in them over the long term.

mRNA technology is a good example. Research continued for years, often without attracting much attention. When the pandemic arrived, the enor-

mous value of that prior investment suddenly became apparent. We need exactly this kind of long-term thinking when it comes to future technologies such as quantum technologies.

What role should the Cyber Agency play in the future?

Our mandate is to take risks. We invest public funds in technologies for which nobody can say with certainty today whether they will ultimately lead to anything. And we are explicitly expected to be willing to take risks.

That is something rather unusual in Germany. There are important role models, such as DARPA in the United States. Technologies emerged from DARPA that changed the world – including the internet itself. Whether we will achieve something comparable, I do not know. But I believe it was the right decision for the German government to say: we need to look further ahead. I am not bothered at all if nine out of ten projects fail. If the tenth project achieves a genuine breakthrough, then the investment was worthwhile.

Does the Cyber Agency see itself as Germany's DARPA?

That is certainly our mandate. The founding documents state, in essence, that we are intended to become a German DARPA. However, there are two major differences. First, DARPA has an annual budget of approximately US\$4.4 billion. Our budget is slightly above €100 million. That is roughly forty times smaller.

Second, DARPA enjoys enormous operational freedom. We, by contrast, work within much stricter legal constraints. That is why I would be cautious with such comparisons. I do not claim that we are Germany's DARPA. But we are meant to embody the same spirit: think-

ing long term, taking risks, and supporting technologies that may become strategically relevant in the future. And that is precisely what we strive to do every day. ■

“We should be willing to believe in technologies and invest in them over the long term.”

Christian Hummert

Why Cyberspace Needs Rules

The debate on cybersecurity often focuses on technical defence measures and hack backs. Yet calls for digital rearmament fall short. What matters is the consistent enforcement of international law.

In 2020, hackers attacked the University Hospital in Düsseldorf. In 2023, a major cyberattack brought Frankfurt University Hospital to a standstill. Patients went untreated, and medical services were disrupted. Cyberattacks have long since become a threat to essential public services rather than merely a problem for system administrators. As early as the beginning of 2026, Germany's Federal Office for Information Security (BSI) described the current situation as very serious in its annual threat assessment. Recent figures from the Federal Criminal Police Office (BKA) reinforce this assessment and demonstrate that Germany is an attractive target. Attacks on industry, public administration, and critical infrastructure are increasing. Ransomware, Distributed Denial-of-Service (DDoS) attacks, and phishing campaigns continue to drive the numbers upward. Artificial intelligence is playing into the hands of attackers, serving as a tool for both efficiency and speed.

Attacks can now be planned with ease, executed automatically, and scaled rapidly. This is no longer merely a warning signal; it is an alarm that cannot be ignored. While identifying perpetrators remains difficult and the line between criminal actors and state proxies such as LockBit, APT28/Fancy Bear, and Sandworm is becoming increasingly blurred, companies, public authorities, and private citizens are being pushed onto the front line. Although the state remains responsible for sovereignty, security, and democratic processes, businesses and society are increasingly forced to build their own protective mechanisms. >

TEXT_ Irina Rosensaft

Irina Rosensaft heads the Programme Office of the National Once-Only Technical System (N0OTS) at FITKO (Federal IT Cooperation), an initiative designed to make public administration more efficient and citizen-friendly. With a background in political science and extensive experience in process optimization, change management, and cybersecurity, she builds bridges between technology, governance, and organizational as well as societal requirements.

KEY MESSAGES

- **Cyberattacks** are becoming a central threat to state capacity, economic stability, and critical infrastructure.
- **Artificial intelligence** is intensifying the dynamics of cyberspace.
- **Technical security measures** alone are insufficient; resilience requires organizational and societal capabilities.
- **The state** remains responsible for security and must not transfer the burden to private enterprises.
- **International rules**, state due-diligence obligations, and cyber diplomacy are essential.

Several questions arise. How far can and should self-defence in cyberspace go? At what point do we require state obligations, international rules, diplomatic mechanisms, and legal guardrails under international law? A physical attack would undoubtedly be treated as a security-policy issue. In cyberspace, however, such clarity is still lacking, which is why attribution is often carried out only hesitantly.

Cybersecurity is frequently described as a collective responsibility. The current dynamics make clear that we are engaged in a race between attack and defence. And it is precisely here that questions emerge regarding the state's duty to protect, the international order, and the ability to constrain an escalating digital arms race.

THE THREAT ENVIRONMENT AND THE DEFENCE RACE

In a dynamic cyber environment, success depends on identifying and closing vulnerabilities before they can be exploited. Artificial intelligence is accelerating this process on both sides. On the offensive side, AI automates tasks such as the discovery of zero-day vulnerabilities and the creation of highly tailored phishing campaigns. On the defensive side, it is intended to identify and mitigate anomalies at unprecedented speed. Today, attacks must be countered within hours rather than days.

The widespread misconception lies in treating technical systems as a sufficient response to what is fundamentally a structural problem. Because cyber tools are dual-use technologies – that is, tools that can serve both attack and defence – this mutual acceleration creates a cycle of attack, defence, and adaptation that can continue escalating indefinitely. From a game-theoretical perspective, this resembles a zero-sum game. Every AI-driven attack triggers an adjustment in defence, and every defensive adaptation provokes a new offensive response.

The central question, therefore, is whether technology alone is still capable of providing security. When technical systems compete against one another, the issue becomes how much con-

trol remains in human hands. Focusing solely on damage limitation and vulnerability management obscures the broader strategic picture. The logic of arms races and technological control is not new. It recalls earlier debates surrounding nuclear, biological, and chemical weapons. The parallel is clear. In each case, the issue was not merely technological progress, but how to contain destructive dynamics, control them, and embed them within an international order. What is new is that deterrence in the kinetic world was more tangible than it is in cyberspace. A Nash equilibrium – a state in which no actor gains an advantage by unilaterally changing its strategy – could be visibly established. Invisible deterrence, by contrast, may fail to maintain equilibrium and instead generate greater uncertainty.

Cybersecurity is also too often treated as a purely technical problem. If digital rearmament continues unchecked, the existing order will eventually break down. It is therefore essential to step back from a purely technical and damage-limitation perspective and adopt a broader view – one focused on political and legal frameworks. If cyberspace is not to become a lawless domain, we must revive the classical principle of state due diligence. States must no longer tolerate digital harm originating from within their territory. The intersection between national defence and international responsibility thus becomes the real lever for preventing an uncontrolled cyber arms race.

RESILIENCE AND THE LIMITS OF TECHNOLOGY

Today's cyber defence relies on a combination of technical and organizational measures, including zero-trust architectures, cyber hygiene, intrusion-detection systems, and Security Operations Centres (SOCs). The state of the art continues to advance, and the defensive walls grow ever higher. Yet resilience does not arise from technology alone. What ultimately matters are the organizational and systemic capabilities.

Cyber hygiene remains the foundation of every defence effort. Even extensive investments in automated SOCs and intru- >

„If cyberspace is not to become a lawless domain, we must revive the classical principle of state due diligence.“

Irina Rosensaft

sion-prevention systems cannot replace expertise or organizational responsiveness. The new threat landscape requires a highly complex defensive architecture, pushing many smaller organizations – whether medium-sized businesses or public-sector institutions – to the limits of their capabilities and expertise.

The key concept is resilience. Yet it is precisely at this point that the central question returns. If technology and local protection mechanisms – within companies and organizations themselves – are no longer sufficient to guarantee the protection of critical services, and if the costs of individual defence become an existential threat, what mechanisms remain? When technology alone can no longer protect us, security once again becomes what it has always fundamentally been: a political and governmental responsibility. At this point, the question of the state's duty to protect comes to the fore.

STATE RESPONSIBILITIES: ENSURING SOVEREIGNTY BEYOND HACK BACK

When technical defence reaches its limits, protection itself has not necessarily been exhausted, and there is no reason to assume that companies or organizations are simply left defenceless. It is precisely at this perceived boundary that the international order within which we still operate becomes visible, even if wars and geopolitical power struggles are currently placing it under pressure. The international order is under strain, yet the principle of sovereignty remains one of its central pillars. This principle of sovereignty could help establish and sustain additional layers of protection. Yet the traditional understanding of the state, bounded by territory, all too often appears to surrender in the face of virtuality.

The debate on retaliation is frequently reduced to hack backs. This creates the mistaken impression that we must engage in digital rearmament and prepare offensive counterstrikes simply to remain capable of acting. Yet this call for digital retaliation is both dangerous and short-sighted. It overlooks the fact that effective responses do not require escalation. Those who see only a digital “eye for an eye” ignore the international-law framework of retorsion, which offers a far broader and more measured range of options.

Admittedly, effective retorsion also requires reliable attribution. And this is precisely where a major constraint becomes apparent. Although public authorities are often technically capable of identifying the perpetrators of cyberattacks with considerable precision, they remain extremely cautious in political practice. This restraint is paradoxical, because international law does not leave us

in a legal vacuum. Beyond national borders, tangible options exist – including against non-state actors operating as proxies.

The focus on hack backs is therefore too narrow. International law provides a much broader spectrum of responses, including retorsion, sanctions, diplomatic measures, and defensive technical interventions. A legitimate act of retorsion is by no means limited to hacking back. The options for responding to an unlawful violation of sovereignty are diverse and must be orchestrated across political, diplomatic, and technical dimensions.

The available measures range from targeted economic sanctions and the expulsion of diplomats to defensive and proactive technical measures that block hostile attack infrastructure without causing damage. We already possess the means to respond – without entering a spiral of digital rearmament. Conflict and war theory have long highlighted the importance of prevention and deterrence. Yet these instruments receive far too little attention in current debates. At the same time, building state cyber capabilities remains an important means of deterrence.

The state's duty to protect must therefore be reimagined: away from the rhetoric of offensive cyber warfare and toward a comprehensive strategic architecture – a holistic protective shield that combines national resilience with cyber diplomacy.

THE INTERNATIONAL COMMUNITY AND THE RULES-BASED ORDER

Every day, we receive reports of cyberattacks that disrupt digital services or bring entire companies to a standstill. Large-scale attacks – particularly those targeting critical infrastructure through sabotage – typically originate from abroad. From the perspective of an observer, it is easy to conclude that cyberspace operates without rules, or that the law of the stronger prevails.

Yet cyberspace is not a lawless domain. The rules governing international coexistence apply here as well. Relevant frameworks already exist, including the UN Group of Governmental Experts (GGE) and the Tallinn Manual. The latter seeks to apply international law to cyber-related activities in both peacetime and wartime. The cyber domain remains particularly challenging because of the problem of attribution. Yet what is often lacking is not legal guidance, but the political will to enforce existing norms.

International law, grounded in the UN Charter, multilateral treaties, and customary international law, provides a robust framework that enables states to act beyond their own borders. At its core lies the principle of state sovereignty, which is firmly embedded in the Tallinn Manual. A cyberattack that damages >

another state's infrastructure or disrupts its governmental functions is not a virtual triviality. Under certain conditions, it constitutes a violation of sovereignty and territorial integrity. International law leaves no doubt that states are responsible for actions originating from within their territory. This applies explicitly even when non-state actors act in their place. If a government tolerates criminal hacker groups operating as proxies, supports or directs them, or knowingly permits them to use infrastructure within its jurisdiction, the resulting attack may be attributable to the state itself under international law.

It is here that the principle of due diligence reveals its full strategic significance. It is the legal lever that must be reactivated if we are to contain the digital arms race. State due diligence means that no state may permit its territory to be used for internationally unlawful acts directed against another state. This obligation is not a vague moral recommendation; it is a legal duty. It requires governments to act.

Any state that knows – or reasonably should know – about cyber operations originating from its territory and fails to take action is violating international law. Due diligence therefore provides precisely the binding framework needed to hold states accountable when they look away or deliberately instrumentalize digital chaos as a geopolitical tool. We must also consider that cyberattacks increasingly target civilian infrastructure and that the consequences of such attacks – particularly when executed and amplified by artificial intelligence – may not always be predictable.

The path toward a stable, rules-based order therefore necessarily runs through international law and multilateral agreements. The international community does not need to reinvent cyber norms; it needs to universalize them. By strengthening multilateral cyber diplomacy, we can create a framework in which violations of due diligence carry tangible political and economic consequences.

A rules-based order will not be defended by participating in an endless spiral of technological rearmament. It will be defended by enforcing existing legal guardrails with political determination and international unity. Only when the diplomatic and economic costs of aggression exceed the operational gains achieved in cyberspace will the digital arms race begin to recede.

A SECURE CYBERSPACE

The answer to threats from cyberspace lies neither in blind digital rearmament nor in political passivity. Sovereignty requires a strategic combination of technical defence, state responsibility, and international rule-making. The state must not permanently shift the burden of cybersecurity onto private companies.

Our defensive architecture is only complete when the sovereign fulfils its duty of protection and due diligence at every level. This requires the targeted strengthening of domestic capabilities and authorities, supported by robust technical defence capacities. Yet these measures constitute only the technological foundation.

The decisive step forward is political. The rules-based order must finally establish itself unequivocally in cyberspace. This is a call to states. What is needed is a coherent linkage between domestic resilience and the enforcement of international norms. Only through proactive cyber diplomacy and binding international agreements can the civilizational foundations of a legal order in cyberspace be firmly established. Only when these elements come together can digital security be sustainably secure. ■

„The international community does not need to reinvent cyber norms; it needs to universalize them.“

Irina Rosensaft

„Regulation Alone Cannot Solve This“

Agentic AI marks a turning point for law and regulation. For tech lawyers such as Raymond Sun, it raises a fundamental question: Who bears responsibility when AI systems make decisions, cause harm, or trigger entire chains of actions?

Raymond Sun, when you think about AI regulation over the past three years, what is the most significant change that comes to your mind?

Raymond Sun: Definitely agentic AI. It challenges traditional legal concepts much more significantly than generative AI. Generative AI generates new words and content. But fundamentally, that content is still static. Agentic AI is different because it performs actions. These systems can run continuously in the background, executing thousands of actions per second. When an agent takes an action, we may not know what reasoning or factors led to it. That makes the “black box” problem in AI far more intractable. Many legal concepts start to fail because, first, we

cannot establish basic facts: What happened? Who were the stakeholders? Why did it happen? Only once those questions are answered can we begin to assess fault.

Which specific legal principles break down first? A central issue is causation, especially in negligence law. Traditionally, negligence requires several elements: a duty of care, a breach of that duty, causation, and damage that is not too remote from the breach. But with agentic AI, even that threshold question is unresolved. What is the legal standard of care for these systems? We have technical standards, but no universal legal standard exists for how agentic AI should be designed or supervised. Without a defined standard, >



INTERVIEW_ Raymond Sun

Raymond Sun, a tech lawyer at Herbert Smith Freehills Kramer and developer from Sydney, Australia, best known for being the creator of the Global AI Regulation Tracker, which is an industry-leading interactive world map tracking AI laws and policies across 195+ countries with over 70,000 active users worldwide. As an active programmer, Raymond dived early into the world of legal engineering since 2018, having worked in technical roles at LawPath (building doc automation platform) and a secondment at IBM (building smart contract platform). He co-founder LegalQuants – a network of lawyers who build their own tech to practise law known as the ‘legal quants’. Raymond is a Top Voice on AI on LinkedIn, and runs the Data Science and AI Association of Australia.

KEY MESSAGES

- **Agentic AI** fundamentally changes the regulatory debate because it not only generates content but can also act autonomously.
- **Legal concepts** such as causality, negligence, and liability are reaching their limits.
- **The greatest challenge** lies in assigning responsibility across complex chains of actions and decisions.
- **Regulation** will not be sufficient; technical security standards and cyber resilience is becoming critical.
- **The more capable AI systems** become, the more valuable human qualities such as judgement, trust and empathy will be.

determining whether a breach even occurred becomes circular.

Can you give an example?

Imagine I download an open-source agentic AI system, connect it to databases and browsers, and let it perform online shopping tasks while I sleep. The next morning, I discover that \$2,000 are missing from my account and important data has been deleted. Something clearly went wrong. But what caused it? Was the harm due to a flaw in the AI's design? Or was it caused by the user's careless setup? Vendor fault, or customer fault? It could even be both. But then comes apportionment: what share of liability falls on each party? Without clarity on causation, calculating damages becomes effectively impossible. The challenge runs deeper, into contract law, especially the concept of consequential loss. Traditionally, consequential loss refers to damage considered too indirect or unforeseeable to fall within a party's responsibility. Consider a clear example: I manufacture screws, and a rocket company buys them to build a rocket. If the rocket later explodes, common sense dictates I bear no liability as the screw manufacturer. The explosion would normally be considered consequential loss.

But now agentic AI complicates this logic...

Yes, because these systems are designed precisely to trigger chains of

actions and consequences. Data loss is equally instructive. In many IT contracts, vendors exclude liability for consequential loss, including loss of data. Excluding data liability has been standard market practice for decades. But if an agentic AI system – that is designed to work with your data – autonomously deletes your data, can vendors still argue that such damage was unforeseeable? This is not a far-fetched remote scenario because we have seen stories where amateur users let their Claude or Openclaw agents have read-write privilege to their desktop files, and run them autonomously overnight, only to wake up in the morning to find their crucial files deleted and there's no option to recover them. This is what „loss of data“ could look like in practice, but to what extent is that a design flaw or a user fault in this particular scenario?

The same applies to hardware damage. Agentic AI systems consume significant computing power. I once ran AI models for hours until my laptop overheated and shut down completely. It survived – but what if the hardware had been permanently destroyed? Traditionally, software providers would classify that as consequential loss. But if developers know their systems are resource-intensive, should they still be exempt from liability? Technology contracting ulti-

mately reduces to a single question: who bears the risk?

So would you say that the “agency” of agentic systems itself becomes a legal challenge?

Yes. Privacy and cybersecurity risks are major issues, but so are bias and discrimination. Those concerns already existed in earlier forms of AI, such as recommendation algorithms and automated decision-making systems. The difference now is scale and impact. Agentic AI systems can directly translate biased outputs into real-world actions. That amplifies the potential harm by orders of magnitude. There is also a growing competition-law dimension. Large companies developing agentic AI are acquiring smaller firms and forming strategic partnerships. Regulators increasingly ask whether this concentration of power reduces competition in the market.

What about speed? An agentic system may cause harm so quickly that reacting becomes impossible. Data may already be deleted before I can intervene in any meaningful way.

Speed compounds all of it. It becomes extremely difficult to pinpoint causation. That goes back to the first issue I mentioned earlier: determining what exactly caused the harm. With earlier generative AI systems, there was usually just a single output to analyze. With agentic AI, you are dealing with chains of actions – potentially thousands or even millions of them within minutes.

And without any real chance for me to intervene.

Exactly. The entire observation layer around AI is still in its infancy. Monitoring these systems comprehensively remains very difficult. At the moment, the best tools we have are system

“Technology contracting ultimately reduces to a single question: who bears the risk?”

Raymond Sun

logs and chains of thought reasoning. For example, systems such as Claude can display intermediate reasoning steps to users. But what appears on screen is probably only a small fraction of what is actually happening internally. Most of the underlying calculations remain invisible to us.

People are now talking about “Mythos” as a potential game changer in cybersecurity.

There are already calls for regulation.

What is your view on this development?

At the moment, much of the discussion is speculative because only a limited number of people have access to Mythos. But according to reports, the system is capable of identifying vulnerabilities in software that has been used for decades. That is deeply alarming from a cybersecurity perspective. In the wrong hands, such systems could compromise banks, telecommunications providers, hospitals – essentially any institution that stores sensitive personal data.

Since the announcement of Mythos, regulators around the world, especially financial regulators, have started reacting. In the United States, the Treasury Secretary reportedly convened meetings with major financial institutions to discuss adaptation strategies. Australian regulators have also issued warnings and called for stronger cybersecurity measures, and similar signals have

come from South Korea and Japan.

If the cyber capabilities of these models continue to increase rapidly – what should the implications for regulation be?

Regulation alone cannot solve this. Practical and technical solutions must come first. What regulation can raise the liability stakes high enough that boards are compelled to treat cybersecurity as a first-order business risk. In Australia, for example, several major cyberattacks in the healthcare sector led to reforms of privacy law. The penalties for breaches became much more severe, which means board directors now face significant personal and financial risks. The idea is that stronger liability creates incentives to adopt state-of-the-art cyber defenses. But ultimately, much will depend on technical standards and operational practice.

What about prohibiting or restricting models with certain capabilities altogether?

In theory, model-based regulation could prevent the deployment of systems considered too dangerous. But politically, this is difficult. We have already seen intense debates around regulating foundation models, for example in the EU AI Act or California’s SB 1047 (vetoed) and SB 53 (enacted in diluted form). Many of these initiatives have been weakened over time under pressure from powerful technology lobbies.

In early 2024 you described the EU AI

Act as the “poster child” of global

AI regulation. How do you see it today?

I still believe the EU AI Act serves as the global reference point for horizontal AI regulation. Around the world, I see four broad approaches emerging.

First, countries with comprehensive horizontal AI laws, a category the EU AI Act exemplifies. Second, countries that still rely mainly on existing laws and self-regulation. Many common-law jurisdictions fall into this category. Third, countries such as China, Russia, and the United States that regulate AI according to specific applications or use cases. And finally, countries currently proposing horizontal AI bills inspired – to varying degrees – by the EU model.

Brazil, Turkey, Chile, Taiwan and Kazakhstan are among the jurisdictions whose proposals most closely resemble the EU approach. But there are also major differences. The EU AI Act combines ethical principles, transparency requirements, risk-based obligations and prohibited practices. Not every country adopts all of these elements. Some reject the idea of banning specific AI systems altogether.

From your perspective as a lawyer – and also someone interested in more fundamental questions about law – have you learned something new from dealing with agentic AI systems? Something about the nature of law itself?

The Dunning-Kruger effect applies here: the more you know, the more you realize how much you do not. AI has its own version of this. The deeper you get into AI, the more you realize how important it is to be human.

What do you mean by that?

This realization became especially clear to me as a lawyer. I recently co-founded a network called LegalQuants. The

*“The deeper you get into AI,
the more you realize how important it
is to be human.”*

Raymond Sun

idea is to create a new type of lawyer – someone who not only understands law, but can also build and use technology directly in legal practice.

When lawyers first encounter AI tools, many feel deeply unsettled. Then, as they grow familiar with it, they feel empowered. Suddenly they think: “I can do my entire day’s work in minutes.” But the deeper you go, the more you discover the limitations of these systems. Even if you build the most sophisticated legal AI imaginable, you still need clients. You still need trust. You still need judgment, integrity, reputation, relationships.

So paradoxically, the rise of AI pushes people back toward human skills?

Exactly. I am already seeing highly technical lawyers actively investing in non-technical abilities. They take communication courses. Some train public speaking or storytelling. Others focus on branding, reputation, or relationship management.

I tried stand-up comedy last year. It was a deliberate choice – a way to train spontaneity, confidence, and the ability to read a room under pressure. The skills gaining value are precisely those AI cannot replicate: humor, empathy, trust, emotional intelligence, human presence.

What distinguishes you, as a human lawyer, from a perfect legal AI system?

AI, however advanced it becomes, remains a capability rather than a social actor. Humans exercise genuine agency in the world. Machines do not. Even if AI becomes extremely capable, people will still prefer dealing with people. They want someone accountable, someone they can relate to. What changes is the premium placed on humans who deploy AI skillfully.

So the human dimension itself may become economically valuable again?

We are entering what I would call an “attention and empathy economy.” Social media generated the on-demand economy. The next step may be an economy centered around connection itself – emotional connection, human interaction, companionship. In China, for example, there are already services such as “rent a boyfriend” or “rent a girlfriend.” It may sound strange today, but it points toward a broader development: connection as a service. Human attention and emotional presence become economic goods.

Is this already becoming a regulatory issue?

Yes. China is currently the only country that has introduced regulation specifically targeting anthropomorphic AI – AI systems designed to simulate emotional or human-like interaction. Chinese regulators are responding to the way many young people are beginning to

use AI for deeply personal matters: therapy, emotional dependence, even issues connected to self-harm. Their concern is that AI could become “too human” in psychologically manipulative ways. That is why I think we are moving toward a new “connection economy,” where human time itself becomes a scarce and valuable resource. Ironically, AI may make human interaction simultaneously more accessible and more precious. ■

“China is currently the only country that has introduced regulation specifically targeting anthropomorphic AI.”

Raymond Sun

Space Is Infrastructure

Satellites provide critical information for weather forecasting, navigation, military early warning, and much more. Why Europe's strategic autonomy begins in orbit.

Mike Tyson's famous dictum – that everyone has a plan until they get punched in the face – was never intended as geopolitical advice. Yet it describes, with uncomfortable precision, the situation Europe finds itself in today. Following the end of the Cold War, the continent built its security architecture on assumptions of stable alliances, predictable adversaries, and reliable technology partners. Those assumptions have been tested repeatedly – and severely.

The question is no longer whether Europe needs strategic autonomy. The question is whether Europe can build it quickly enough – and whether it will build the right things. Space is one of those things.

THE PROBLEM OF INVISIBLE INFRASTRUCTURE

We tend to think of strategic infrastructure in physical terms: ports, pipelines, roads. Yet in the twenty-first century, the most consequential infrastructure is often invisible. It orbits the Earth some 500 kilometres above our heads. Weather forecasting, ship and aircraft tracking, ballistic-threat early warning systems, GPS signals, intelligence collection, the detection of jamming and spoofing, and many other capabilities depend heavily on satellites. And in most of these areas, Europe has long relied on non-European providers – commercially, technologically, and industrially.

This is not a theoretical vulnerability. Dependence on external providers of critical data infrastructure means that precisely at those moments of crisis when data matter most, access can be restricted, delayed, or denied. The concept of “strategic autonomy” is meaningless if the sensors that inform strategic decisions belong to someone else.

One of the key lessons of recent years is that infrastructure can be weaponized. Trade routes, energy supplies, and digital networks have already been used as instruments of pressure. Space infrastructure will be no exception. >

TEXT_ Celia Pelaz

Celia Pelaz is currently Chief Operating Officer and a member of the Management Board of Spire Global, which operates a multifunctional satellite constellation with manufacturing facilities in Munich, the United Kingdom, and the United States. In 2021, Celia Pelaz was appointed Chief Strategy Officer and member of the Executive Board of Hensoldt AG. She subsequently served as Chief Operating Officer (COO) until August 2024. Effective 1 October 2026, she will become CEO Defence & New Space at Schaeffler and, in that capacity, assume leadership of the management board of STech Defence GmbH, the independent subsidiary of Schaeffler AG.

BUILDING THE ALTERNATIVE

Over more than a decade, Spire Global has designed, built, launched, and operated an entire satellite constellation from the ground up. With more than 240 satellites launched across 40 launch campaigns, Spire's multifunctional satellite platforms are capable of collecting weather data, tracking air traffic movements, detecting radio-frequency (RF) anomalies, and providing defence and security customers with near-real-time intelligence.

For Europe's strategic debate, what matters is where this capability is being developed. Spire's satellite manufacturing facility in Munich, opened in May 2026, is neither a regional office nor a sales outpost.

It is a vertically integrated production site featuring an ISO-certified clean room, the capacity to manufacture up to 100 satellites per year, and the ability to conduct integration, testing, and mission-specific payload development on European soil. It is, in the most literal sense, sovereign space infrastructure. A satellite built in Germany, launched by a European provider, operated by a company with a strong European footprint, and delivering data to German and European customers is fundamentally different from a data subscription purchased from a provider with no meaningful presence on European soil.

THE INDUSTRIAL LOGIC OF CONVERGENCE

If the Munich facility represents Spire's physical anchor in Europe, then two agreements signed this year point to something larger: the moment when traditional European industry recognized that space is not a niche technology sector but a strategic domain connected to everything it already does.

In May 2026, Spire and Schaeffler AG – one of Germany's leading precision engineering companies, employing more than 110,000 people – signed a Memorandum of Understanding (MoU) to develop space subsystems and satellite platforms manufactured in Germany. The industrial logic is straightforward: Schaeffler's expertise in bearing technology, drive systems, and power electronics is combined with Spire's experience in platform architecture, flight software, and satellite operations. Together, the two companies aim to establish a sovereign European business for space hardware and missions before the end of the decade, serving applications in defence, weather services, civil security, and critical infrastructure.

At ILA Berlin 2026, Spire signed a second MoU with Diehl Defence, one of Germany's leading air-defence system integrators. The objective is to combine space expertise with defence technology, particularly to advance early-warning capabilities against ballistic and hypersonic missile threats. This illustrates the dual-use nature of modern satellite systems. The same constellations that collect weather data or track air traffic can, with the appropriate sensors and analytical capabilities, also generate security-relevant situational awareness.

The broader goal is to integrate space-based information with weapons systems and command-and-control centres. The issue is no longer simply about data. It is about building an integrated European defence infrastructure.

DUAL-USE AS A STRENGTH, NOT A COMPROMISE

One of the most persistent misconceptions in European technology policy has been to view dual-use capabilities as a problem to be managed rather than as a strength to be leveraged. The United States and China never made this mistake. Their most powerful technology companies are, either implicitly or explicitly, national security assets.

A clear example in Spire's case is radio occultation (RO) data. RO works by measuring how GPS signals are refracted as they pass through the atmosphere. This produces some of the most accurate atmospheric profiles available for weather forecasting. Yet the same physics and the same data can also be used to detect the thermal and atmospheric signatures of missile launches. One sensor, one data stream, two fundamentally different applications: commercial weather intelligence and military early warning.

This is dual-use in the truest sense of the term – not an accidental secondary application, but a structural characteristic of the technology itself. The same principle applies to Spire's radio-frequency monitoring capabilities. Infrastructure used to detect AIS spoofing for maritime customers can also be employed directly to identify jamming activity and electronic warfare operations for defence customers.

Europe now has an opportunity to stop treating this reality as a complication and instead build upon it. The commercial business model – the sale of weather data, vessel tracking, and aviation intelligence – finances the satellite constellation. Once deployed and operational in orbit, that same constellation can >

support defence applications at only marginal additional cost. Yet access to commercial data represents only one of the two options that Spire offers. A defence or government customer requiring full operational sovereignty – a dedicated constellation under its own control, without dependence on a shared commercial service – can obtain that as well. Spire has launched more than 240 satellites across over 40 launch campaigns. The company knows how to design, manufacture, test, and rapidly deploy systems.

This institutional knowledge, painstakingly acquired through more than a decade of operational experience, is precisely what many European defence programmes currently lack and cannot develop on short notice. The choice, therefore, is not between commercial data and sovereign capabilities. It is between partnering with an organization capable of delivering both, or starting from scratch without such a partner.

STRATEGY IS NOT A WHITE PAPER

The question is this: How does Europe develop genuine strategic capabilities – not merely higher defence spending, but also the quality of thinking and the industrial depth required to make strategy more than a document? Space infrastructure is part of the answer. Not because satellites are glamorous, nor because space is an exciting technological frontier, but because the data flowing from orbit increasingly determine who can see what is happening, who can anticipate what will happen next, and who can act on that knowledge in time to make a difference.

Europe possesses the industrial base. It possesses the technical talent. It possesses companies willing to make long-term investments in sovereign capabilities. The opportunity now is to bring these resources together within a coherent industrial strategy – to recognize that the entry of a precision-engineering company such as Schaeffler into the space sector, or the integration of a defence systems provider such as Diehl with a satellite constellation, are not niche business stories but strategic events. The punch has already landed.

The plan must be updated. And the infrastructure needed to support the next plan must be built now – and it must be built here. ■

„How does Europe develop genuine strategic capabilities – not merely higher defence spending, but also the quality of thinking and the industrial depth required to make strategy more than a document?“

Celia Pelaz

“It Is About Protecting Our Democratic Structures”

Digital sovereignty is far more than an IT issue. For Claudia Alsdorf, Head of Business Development at Schwarz Digits, it is about the ability to retain control over critical infrastructure, data, and decisions.

Claudia Alsdorf, what do you understand by digital sovereignty, especially as a strategic decision?

Claudia Alsdorf: For me, digital sovereignty means remaining self-determined, independent, and capable of acting in the digital space. This ability to act and self-determination are the decisive points. And that is exactly where the strategic aspect comes into play. It is no longer just about IT or IT security, but about maintaining the ability to act overall. Digital infrastructure now shapes physical infrastructure and vice versa. That is why the topic is so strategically relevant.

What does the ability to act mean in concrete terms, especially in light of current crises?

This can be well illustrated using a hospital. I am sovereign if I can ensure that medications are available regard-

less of geopolitical tensions. That is, regardless of what happens in the Strait of Hormuz or other conflict zones. If supply is secured, that is an expression of sovereignty. Technology naturally plays a central role in this. I must use systems where I can be sure that data is stored in a sovereign environment and that unauthorized parties have no access. At the same time, I always need a Plan B. Even if a provider fails, an alternative must immediately take effect. This extends to the power supply. Backup generators may be part of it as well. A hospital clearly shows how closely intertwined technology and physical dependencies are.

How would you distinguish sovereignty from resilience?

I would not want to separate them at all. One depends on the other. Resilience is often the starting point, be-



INTERVIEW_ **Claudia Alsdorf**

Claudia Alsdorf is Head of Business Development at Schwarz Digits, the IT and digital division of the Schwarz Group. She is one of the pioneers of the German market for 3D and virtual reality applications and founded one of Germany's first companies in this field. In addition to her entrepreneurial activities, she has worked for many years with leading corporations and consulting firms such as SAP, KPMG, and Microsoft, focusing on the public sector, education, healthcare, and HealthCare & Life Sciences.

KEY MESSAGES

- **Digital sovereignty** does not mean autarky; it means retaining the ability to act independently and effectively, even in times of crisis.
- **Resilience and sovereignty** are inseparably linked. In many cases, the desire for sovereignty emerges only after experiencing vulnerability.
- Strategic control over critical data, infrastructures, and dependencies is becoming a fundamental prerequisite for both security and competitiveness.
- **Cybersecurity** is no longer a peripheral IT issue; it is a leadership responsibility and an essential component of strategic corporate governance.
- **Digital sovereignty** is ultimately a question of democratic stability.

cause many only realize where they are vulnerable through crises. That moment when it becomes clear that there is no Plan B is decisive. From that arises the impulse to act differently. Resilience is initially often a feeling, triggered by pressure. And that feeling is often the beginning of sovereign action. Usually it does not happen the other way around.

Does resilience, like sovereignty, have a proactive dimension?

Yes, absolutely. It must be thought proactively and, above all, holistically. And it must be thought strategically, not only from a corporate perspective, but also from a societal one. I have experienced this myself. I live in Berlin, in the southwest, and the power outage at the beginning of January really shook me. Since then, some things have changed for me. I bought a backup generator and a small combined heat and power unit. Things I did not have before.

What did this experience do to you?

It made my own vulnerability and exposure very clear to me. Perhaps this is comparable to the moment when one becomes seriously ill and suddenly feels one's own finiteness. Of course, it is not exactly comparable, but the psychological effect is similar. You realize that you need to rethink priorities and reorient yourself.

Does sovereignty mean autarky?

No. For me, sovereignty is more about intelligently responding to one's envi-

ronment. We are all part of systems and have dependencies on one another. That cannot be avoided. In my view, it would even be dangerous to understand digital sovereignty one-dimensionally as autarky.

What does that mean in concrete terms when dealing with technology providers?

An important point is to avoid a classic vendor lock-in. But that does not mean completely abandoning large cloud providers. That would be naive. Many things work very well there, and a radical shift would often be neither economically nor practically sensible. But I can prepare. I can develop an intelligent data strategy. There is data that is mission critical. It must be stored in an environment where I have full control. Other data can remain in existing structures. I am therefore expanding my system. In this way, I reduce dependencies and create room for maneuver. And that is exactly what digital sovereignty is about.

As with a blackout, it is therefore about securing myself in vital areas while also keeping an eye on my environment so that I can rely on it in an emergency. And this is not something you define once and then check off. It must be reviewed regularly. I have to check whether my backup generator still works, whether I have enough batteries, whether I have sufficient supplies at home. It is a continuous process. You think about these things in parallel.

Do you also encounter critics who accuse Schwarz Digits of speaking about sovereignty while at the same time working with Google, using a similar argument?

Yes, that is exactly this line of thinking. For example, we have said that we only work with a partner like Google if we can ensure that we have a clear Plan B. Concretely, this means that the data is additionally hosted in real time in our own environment within STACKIT and that only we possess the key. Neither the provider nor any political system has access to it. That is decisive. I retain control and can decide myself how to use it if necessary.

From a strategic perspective, where do you see particularly critical dependencies?

If you look at the entire value chain, you have to honestly say that in Europe we are dependent in many areas. This starts with hardware, goes through GPUs, and extends to AI chips. These are all areas where we need to counter-act. There is movement, and there is growing awareness. But it will take time. Nevertheless, it would be fatal to say we will not even start because it is difficult.

What does that mean for companies, for example for a medium-sized business?

What considerations should it make?

I would not advise anyone to change everything immediately. The first step is a strategic roadmap. It begins with a clear data classification. Which data is really critical, which is not. From this, >

“The power outage in Berlin made my own vulnerability and exposure very clear to me.”

Claudia Alsdorf

a multi-cloud architecture usually develops. You have to ask where real dependencies exist and where gaps are. And then consider how to reduce them, for example through a Plan B. At the same time, it is worth looking at European alternatives. There are more than many think. It is also important to think in ecosystems. No company has to solve this alone.

We have, for example, launched an initiative called "Next Level Mittelstand." There, we work together with companies to develop concrete IT blueprints for greater sovereignty. And one point is particularly important to me. Cybersecurity must no longer be seen as a tedious obligation. It is a central strategic issue. Anyone who does not take it seriously will not be able to act sovereignly in the long term.

There is discussion about Anthropic's new AI model Claude Mythos Preview, which can identify and exploit undiscovered vulnerabilities. Some experts fear the impact could be dramatic...

Yes, absolutely. That's precisely why it would be fatal to continue treating cybersecurity as a niche topic that takes place somewhere in the back room of the IT department. That is still often how it is seen. In reality, however, it can become a central potential point of failure for the entire company. Security must be understood strategically and comprehensively. It is about the connection between the digital and physical world, up to securing power grids or transformers. This holistic thinking is still often lacking.

What does this mean for our understanding of security if systems are fundamentally vulnerable?

This makes the question of where which data is stored all the more important.

Which data belongs in a public cloud, which in a private cloud, which may need to be completely isolated. This differentiation is central.

There are current examples, such as dependency in the military sector on American hyperscalers. You do not need a highly complex cybersecurity solution to recognize that this is problematic. One has to ask why this has not been resolved for so long, even though alternatives exist. Of course it costs money, but the security gained is far more important.

What role does the human being play in digital sovereignty? From your point of view, is the human more of a disruptive factor or part of the solution?

We humans often only react when the pressure becomes great enough. The pitcher goes to the well until it breaks. We are apparently not very good at recognizing risks early and acting accordingly when they do not yet directly affect us. This can also be seen in climate protection. The knowledge is there, the risks are known, and yet too little happens. Because it does not yet hurt in everyday life. This mechanism works both individually and politically. I myself only started to prepare differently after the power outage. During that time, I managed to get one of the last backup generators. This shows how deeply rooted this behavior is.

What does that mean for political and societal decisions?

The big question is how we can change systems so that they act more proactively. So that they do not only react once the damage has occurred. The knowledge is there, but it is not translated into action. If we continue like this, we risk no longer having real alternatives in a few years.

What would need to change?

Sovereignty must be understood as a central strategic issue. At board level in companies and at the political level. It must become the focal point of decisions. Ultimately, it is about protecting our democratic structures. If critical infrastructures do not function, frustration arises. And this frustration can build up socially. Then democracy itself comes under pressure. In this sense, sovereignty is not a marginal technical issue, but a fundamental prerequisite for stability. For a long time, we have understood freedom as the central guiding principle. Now we must begin to take sovereignty just as seriously.

Do we primarily need the state for this, or should much more initiative come from companies?

I believe we must demand this sense of responsibility at all levels. This critical questioning begins with each individual. Where do I make myself dependent in my everyday life? Do I use certain payment systems or are there alternatives? Do I store all my data in the cloud or do I consciously decide against it? I can personally take action. At the same time, this interplay must work. If awareness is not present at both the individual and societal levels, little will change structurally.

Where do we stand in terms of digital sovereignty at the European level, especially with regard to hybrid threats?

What I currently perceive as positive is the shift in awareness. Awareness of the problem is there and is growing. Now it is about moving into implementation. The European Commission itself is moving toward multi-cloud strategies. Things are also happening at the national level. There are countries that are beginning to actively reduce their >

dependencies and prefer alternative solutions. These are important steps. Of course, this does not happen overnight and will always be questioned. But I believe it must be pursued consistently. Constant dripping wears away the stone.

Is this ultimately also a mindset or cultural problem?

I think so, at least partly. Historically, Europe has developed strongly in the shadow of others, especially after the Second World War. We hardly know it any other way than that key technological impulses come from outside. If you look further back, it used to be different. Germany was a leader in the natural sciences, German was a language of science. That has been lost, and with this historical experience a certain self-image has developed. I think we have become accustomed to not being the ones who lead. Perhaps we unconsciously often feel like those who follow. That is, of course, a problem. Changing that is difficult. But it is necessary if we truly want to act sovereignly.

Beyond this underdog feeling, is there not also a certain overconfidence or a sense of moral or intellectual superiority?

I do not know. When I travel, I often end up in these typical business hotels in Germany and turn on the radio in the morning. Sometimes I switch between international stations like CNN and the ARD Morgenmagazin.

And honestly, it irritates me. In the German morning program, the topic is how to protect plants in the garden from night frost. When I listen to CNN, it is about major global political issues. That is a completely different level of discourse.

What is, for you personally, a sovereign person?

For me, a sovereign person is a responsible, self-determined individual. Someone who is able to respond to changing environmental conditions and make independent decisions.

And this also includes engaging with new technologies, for example with AI, and being able to assess them. I think the categorical imperative still has great importance. That is, the ability to always reflect on one's own actions in the context of the environment and their impact on others.

For me, sovereignty means exactly that. Weighing, understanding, responding. And consciously positioning oneself within a larger context. ■

“For me, a sovereign person is a responsible, self-determined individual.”

Claudia Alsdorf

04_ Business & Organization

"Innovation cannot be planned. You just don't know when and where innovation comes. What you can do is just foster an environment that is conducive to innovation."

Robin Li (Co-Founder und CEO von Baidu),
World Governments Summit, Dubai,
February 11, 2025

“Get Up, Learn, Move Forward!”

Prosperity will increasingly depend not on preserving existing structures, but on the ability to adapt. Economists Markus Brunnermeier and Stefan Kolev discuss their „Agenda des Aufbruchs“ (Agenda for Renewal) and resilience as a new narrative for economic policy.

Markus Brunnermeier, Stefan Kolev, would you describe your „Agenda des Aufbruchs“ as a strategy?

Markus K. Brunnermeier: In Germany, many individual reforms are being discussed, but what is often missing is an overarching strategy – a common thread. That is precisely what we are trying to provide. We want to offer a narrative that brings together different policy areas and can also be communicated to the public. Resilience is a broad concept, but that is exactly its strength. It is modern, not yet overused, and politically inclusive. It does not belong to any particular party or ideological camp. That makes it well suited to serve as a common frame of reference.

Stefan Kolev: What we are currently

witnessing in Berlin is a veritable flood of strategies. There is the High-Tech Agenda, the Economic Security Strategy, and many other policy concepts. In one sense, our paper is also a strategy: it is intended to guide political action. It is about thinking in the long term and anticipating possible developments. But in another sense, it goes beyond what is usually understood by strategy. What matters to us is that resilience should not remain a purely top-down project. Political leadership is, of course, essential. But it is equally important that companies, institutions, associations, and citizens change the way they think. We speak of a resilience mindshift – a broader cultural transformation. >



INTERVIEW_ **Markus Brunnermeier, Stefan Kolev**

Prof. Dr. Markus K. Brunnermeier is the Edwards S. Sanford Professor of Economics at Princeton University and Director of the Bendheim Center for Finance. His research focuses on resilience, international financial markets, macroeconomics, financial and monetary stability, and digital money. In 2020, he launched the webinar series Markus' Academy. The second edition of his book “The Resilient Society” will be published on 18 August 2026.

Prof. Dr. Stefan Kolev is Professor of Economics at the West Saxon University of Applied Sciences Zwickau and Academic Director of the Ludwig Erhard Forum for Economy and Society in Berlin. He is co-founder of the Network for Constitutional Economics and Social Philosophy (NOUS) in Freiburg and

What exactly needs to change?

Brunnermeier: Germany has traditionally been strongly oriented towards stability. The aim has been to avoid or shield against risks wherever possible. That approach has many advantages, but it reaches its limits in a world of constant change. We therefore argue for greater flexibility, a stronger willingness to experiment, and a somewhat higher tolerance for risk. We need to try things. And if something does not work, we need to be able to adapt. The crucial capability is the ability to change course. Resilience does not mean holding on to the old at all costs. It means being able to take a new path after a setback. That also requires greater tolerance for failure. People who try something and fail should not be permanently stigmatised. What matters is learning from failure and moving on.

Why is this way of thinking becoming so important now?

Brunnermeier: Because we are experiencing technological and geopolitical disruption at the same time. Germany has long been exceptionally successful at refining existing technologies. We kept improving the internal combustion engine. Today, however, we are facing technological leaps, driven for example by artificial intelligence and electric mobility. In such situations, you cannot wait until everything has been perfectly balanced. You have to learn faster and adapt faster. The same applies geopolitically. As the international order becomes less stable, stability alone is no longer enough. What we need instead is agility and the capacity to respond to new developments.

Can you give a concrete example?

Kolev: Take the debate on employment protection. It illustrates very well how

the idea of resilience can be applied in practice. One point is important here: we are not talking about socially vulnerable groups who require particular protection. We are referring to a clearly defined group of highly paid employees. If we cannot create greater flexibility even in this segment of the labour market, it will be difficult to achieve elsewhere. The idea is that greater flexibility attracts new investment, encourages innovation, and ultimately contributes to higher wages and a more dynamic technology sector.

In this context, resilience means creating political conditions that allow greater flexibility and then observing the cultural effects that follow. If people experience that greater flexibility can also generate greater prosperity, this gradually changes society's attitude towards risk and change.

Brunnermeier: Employment protection is a good example. But the same logic applies equally well to artificial intelligence. The key question is this: where will value creation take place in the future? Will it be concentrated in the large foundation models or in the applications built on top of them? For Europe, it would be advantageous if value creation occurred primarily at the application level. That is where European companies have strengths – not only SAP, but also many industrial companies with extensive proprietary data. To achieve this, however, foundation models need to become as standardised as possible.

What does that mean in practice?

Brunnermeier: In this context, resilience means being able to switch at any time. A company should be able to move easily from one model to another – from ChatGPT to Claude or any other pro- ➤

serves on the Advisory Council for Evidence-Based Economic Policy at the German Federal Ministry for Economic Affairs and Energy. His research focuses on the history of economic thought, ordoliberalism, institutional economics, and economic sociology.

KEY MESSAGES

→ **Resilience** means more than stability: the crucial capability is to adapt quickly after shocks and find new paths forward.

→ **The focus** should be on people and their capabilities – not on preserving individual products, industries, or jobs.

→ **Greater flexibility, experimentation, and tolerance** for failure strengthen innovation, investment, and economic dynamism.

→ **Europe** must reduce strategic dependencies, build alternatives, and safeguard its capacity to act.

→ **A modern Social Market Economy** combines dynamism with security, enabling change without jeopardising social cohesion.

vider. The more standardised the models become, the stronger the competition among foundation model providers. That is why public procurement should also encourage open and standardised systems. In that case, profits and value creation will not necessarily accrue primarily to the providers of foundation models, but increasingly to the companies building applications on top of them. This would make Europe more independent and more resilient. Political intervention remains a risk, of course. A government could restrict access to particular models. That is precisely why Europe needs strategic resilience and as many alternatives as possible.

How does resilience differ from traditional risk diversification?

Brunnermeier: Risk diversification means making sure you have several suppliers that are as independent from one another as possible. If one fails, another remains available. Resilience goes a step further. It is not enough simply to have a second supplier. The surviving supplier must also be capable of scaling up production if the first one fails. Resilience therefore encompasses not only preparedness but also the capacity to respond. It asks what happens after the shock. How quickly can I adapt? That is why resilience is a broader concept than risk management alone.

Does that also make resilience the core of what we call digital or technological sovereignty?

Brunnermeier: Yes, absolutely. Resilience and sovereignty are closely connected. The more resilient you are, the more sovereign you become. Take payment systems. As digital payments become more widespread, we also need

to consider what happens if existing systems fail. This is where the digital euro comes in. Its most important function may not be processing as many transactions as possible. Rather, it serves as a safeguard.

If private payment systems or international providers were suddenly unavailable, Europe would need an alternative. The very existence of such an alternative strengthens Europe's ability to act and reduces dependencies. That is resilience.

Your paper also addresses geopolitical dependencies. Does resilience have a deterrent effect?

Brunnermeier: If a potential adversary knows that I have alternatives, its ability to exert pressure on me diminishes. That strengthens my negotiating position. Critical dependencies have always existed. The difference is that they used to be largely reciprocal. Russia had leverage over Europe, and Europe had leverage over Russia. There was a certain balance.

The rules-based international order could build on that balance of mutual dependencies. Today we are seeing something different. Major powers are increasingly exploiting dependencies strategically. Their willingness to play by shared rules is declining. In such a world, resilience once again becomes central. It ensures that you are not left defenceless against the power of others. This is even more important for smaller countries than for large ones. That is why the concept is now appearing everywhere – from security policy to economic policy. Europe must become more resilient. Otherwise, it risks being squeezed between the two power centres of the United States and China.

Kolev: That is exactly why resilience is

more than an economic policy concept. It changes the way we think about security, prosperity, and political agency. In a world of growing uncertainty, it is no longer enough to rely on stability. We need the ability to adapt without losing our freedom of action. If resilience creates additional options – if it gives me room to manoeuvre – it reduces the power others have over me. They may still have influence, but they no longer possess overwhelming, asymmetric power. >

“As digital payments become more widespread, we also need to consider what happens if existing systems fail.”

Markus K. Brunnermeier

But to be able to adapt, you also need allies, don't you?

Kolev: Absolutely. That is why alliances play such a central role in our paper. The most important alliance is Europe itself. The European Union must not fragment. Beyond that, we describe a series of concentric circles around Europe. We call this a reintegrative European Union. It deepens integration internally – for example through the Single Market – while at the same time building graduated forms of partnership with different external partners.

These include the United Kingdom, Turkey, and North Africa. Beyond that, there is a wide range of partnerships around the world. Naturally, an agreement with Canada has a different character from one with Argentina. But that is precisely the point: creating a network of relationships with varying degrees of closeness. Depending on the issue, different coalitions and coalitions of the willing will emerge. This kind of variable geometry will become increasingly important in the new world order.

Is resilience itself a form of power?

Brunnermeier: Resilience is not hard power in the traditional sense. It is better understood as the ability to deal with power without becoming subject to it. You could say that resilience empowers those who are less powerful. It reduces vulnerability. And those who are less vulnerable ultimately possess greater power.

Kolev: To me, resilience is the ability to preserve your own DNA in a world shaped by power. If you look back at the Cold War, it was not the more centralised system that ultimately prevailed. It was the more adaptable one. The open society proved more successful over the long term because it was

more capable of learning and more flexible. Resilience is the power of not having to appear powerful. It rests on adaptability, decentralisation, and the ability to reinvent oneself again and again. If we truly become resilient, we need not fear authoritarian models of power. We will be able to withstand them without abandoning our own principles.

Alongside resilience, your paper places strong emphasis on capabilities and reindustrialisation. How are these concepts connected?

Brunnermeier: Germany has traditionally thought in terms of products. We define our strengths by what we manufacture. In a world of profound technological disruption, we believe that perspective is too narrow. Products may disappear or lose relevance. What really matters are the capabilities of the people behind them. Technical expertise, engineering excellence, collaboration between companies and institutions – these capabilities remain valuable even when markets and technologies change. That is why we should spend less effort trying to preserve existing products at any cost and focus instead on maintaining and developing people's capabilities.

What would that mean for the labour market?

Brunnermeier: Our institutions are currently designed largely to protect specific jobs. We would place greater emphasis on people's ability to develop new skills and seize new opportunities. Take an engineer. Many remain with the same employer because, over the years, they have accumulated various employment protections and benefits. Changing jobs involves uncertainty. That reduces mobility and makes adap-

tation more difficult. In our view, the system should be designed to make transitions more attractive.

Kolev: You could describe our approach as a form of applied humanism. The true capital of our economic system is not the product but the person. The most important capability is the ability to get back on your feet after a shock and reinvent yourself.

Let's take the automotive industry as an example. What would your approach mean in practice?

Kolev: Take Zwickau. It is home to a major Volkswagen plant whose future is highly uncertain. For us, this is a very concrete challenge. If thousands of jobs disappear in a region, we need to enable people to create something new. Perhaps only 80 out of 8,000 affected workers will start a business. But those 80 can create new jobs in which many of the others may eventually find employment.

That is why, for us, reindustrialisation does not simply mean that an old factory is taken over by a new corporation. The real question is: how does something new emerge? How do we create the conditions for creative destruction? We can already see the destruction all around us. The more interesting question is how to enable the creative part.

Can your paper therefore also be understood as a guide to managing transitions?

Brunnermeier: Yes, that captures its essence very well. This applies to countries, to Europe, and equally to every individual. If someone loses their job or fails in a project, the challenge is to make the transition to something new easier. That is why we place such strong emphasis on capabilities, lifelong learning, and adaptability. This also requires greater societal

tolerance for failure. If not all of those 80 entrepreneurs succeed, that should not become a lifelong stigma. People who have tried and failed should have the opportunity to get back up and start again. This is not only an economic issue – it is above all a cultural one. Resilience requires a different mindset. A society that wants to enable change must also learn to deal differently with setbacks.

You speak about resilience at many different levels. What distinguishes the resilience of an economy from that of a company or an individual?

Brunnermeier: The answer initially sounds paradoxical. An economy is most resilient when individual companies are not too resilient. Imagine a system in which no company could ever go bankrupt. Every individual firm would be very well protected. Even unproductive companies would survive. At first glance, that might appear resilient. In reality, it is not. The economy as a whole would become rigid and lose its capacity to adapt.

Macroeconomic resilience arises precisely because change remains possible. That includes allowing unproductive companies to leave the market and be replaced by better ones. Schumpeter's concept of creative destruction is therefore a fundamental element of resilience. The logic of stability often seeks to preserve existing structures at all costs. The logic of resilience, by contrast, asks how a system can remain effective despite continuous change.

What does all this mean for the individual?

Brunnermeier: There is an important distinction here. People are not companies. When a company fails, that is part of a dynamic economic process. With individuals, our priority must be to help

them get back on their feet. We want to encourage people to take risks – professionally as well as personally. Anyone who starts a business, changes jobs, or tries something new needs to know that failure will not send them into free fall. That is why the social safety net is also part of resilience. It provides the security people need in order to embrace change in the first place. Resilience does not mean avoiding risk. It means being able to take risks because you know you will be able to recover afterwards. People must not be permanently excluded from economic and social participation.

Kolev: The twentieth century taught us that people are not chess pieces. That is why individual resilience has many dimensions. It is economic, but also psychological and social. One important lesson is that we need social policy. At the same time, we have learned that social policy should not simply preserve the status quo. The modern welfare state should empower people. It should enable them to cope with change, acquire new skills, and continue learning throughout their lives. Social policy should enable dynamism, not prevent it.

What does that mean for the labour market?

Kolev: It requires two things. First, people who are capable of developing and adapting. Second, a dynamic economy that is able to absorb them again. That is precisely why we discuss issues such as employment protection. This is not simply about labour law. It is about enabling economic dynamism so that new companies emerge and new employment opportunities are created. The more dynamic the economy becomes, the shorter periods of unemployment should become.

Does that make the debate about employment protection a strategic issue?

Kolev: Yes, I would say so. Employment protection is, of course, only one building block among many. But it illustrates particularly well what is fundamentally at stake.

Brunnermeier: We should not reduce everything to this single issue. Another example may be even more important: occupational profiles. Germany has traditionally excelled at continuously refining existing technologies. This mindset is also reflected in our education and vocational training system. Many occupations are defined in great detail and are highly specialised. In a world of rapid technological change, that increasingly becomes a problem. Today, nobody knows which professions will be in demand ten years from now. That is why we need broader and more flexible qualifications.

“We need social policy. But we have learned that social policy should not simply preserve the status quo.”

Stefan Kolev

One proposal, for example, is to make master craftsperson qualifications more modular. Someone who earns a qualification in their early twenties should be able to expand it more easily later in life and adapt it to new technological developments.

So ultimately this is about what are often called meta-skills?

Brunnermeier: Exactly. We need to invest more in capabilities that enable people to acquire new capabilities. Less rigid specialisation, greater adaptability. The central question is no longer: Which profession am I training someone for today? The real question is: How do I equip people to thrive in a world that we cannot yet foresee?

Are there international role models?

Kolev: I believe we can learn a great deal from two regions that have taken very different paths: the Nordic countries and Eastern Europe. In the Nordic countries, it became clear as early as the late 1980s that the welfare model had entered a period of crisis. The response was not to choose between dynamism and security. The response was to combine them in a new way. The Danes coined the term “flexicurity”. Sweden, Denmark, and Norway engaged in a genuine competition of ideas, demonstrating that economic dynamism and social security do not have to be opposites. Many of the reforms we are discussing today – for example, greater labour market flexibility – have long been part of everyday reality there. Eastern European countries took a very different path. In many cases there was no carefully designed strategy. Instead, people had to develop extraordinary adaptability after 1989. One could say that they learned the ability to acquire new skills the hard way.

The distinction is important, however. In the Nordic countries, this transformation took place within the framework of a well-functioning welfare state. In much of Eastern Europe, it did not. That is why Germany should value its effective welfare state. We need greater dynamism, but we also need a welfare state that remains credible and provides people with security during periods of transition. The essential point is this: we must enable the new without losing social cohesion. There are international examples from which we can learn.

Brunnermeier: Our education systems are still largely designed to impart specialised knowledge. But in a world of radical technological change, something else is becoming increasingly important: learning how to learn. Meta-learning is, in a sense, a higher-order capability. The focus is no longer on any particular skill, but on the ability to acquire new ones. Artificial intelligence, in particular, is taking us into a world where technologies and ways of working will change continuously. In that environment, openness to new ideas becomes decisive.

If you look at current data on AI adoption, for example, American and British companies are embracing new technologies far more quickly than German companies. That also reflects differences in mindset. So I would say that alongside meta-learning, what we need above all is curiosity – the willingness to try new things, discover new possibilities, and continually adapt to changing circumstances.

Ultimately, it is about remaining mentally young. It is about not reaching the age of fifty-five and beginning to withdraw mentally into retirement, but

instead feeling: I am still needed. I can still learn. I can still help shape the future. This is a very long-term challenge. But that is precisely why we have to start now.

What do you see as the greatest obstacle to this new way of thinking?

Kolev: The greatest obstacle is human nature itself. We should begin with a realistic view of people. Most of us are oriented towards the status quo. Change initially creates discomfort. That is perfectly normal and probably deeply rooted in our evolutionary history. Most people do not respond to change with enthusiasm, but first with scepticism or fear. The crucial question, therefore, is: how do we persuade people to move beyond the status quo? What kind of narrative can credibly convey that the journey is worthwhile? To me, resilience is precisely such a narrative. It has to be told differently in different life situations. But its core remains the same: there is a path to a better future, and it is worth taking.

Brunnermeier: I see it much the same way. The biggest obstacles are vested interests and the desire to preserve existing privileges. Many people sense that change is coming, yet try to ignore it. You could call it an ostrich strategy. There is something else as well: our public debate relies heavily on fear. Fear sells – politically as well as in the media. But fear does not make people resilient. It makes them rigid. Resilience requires the opposite. It requires adaptability, flexibility, and the willingness to respond to new circumstances.

Does it perhaps take a major crisis – a major external shock – to bring about this change?

Kolev: History unfortunately shows that major crises often accelerate change. >

But that is exactly what we should not wait for. If a major shock occurs before we have built resilient structures, our prospects are poor. The decisive period is the time before the crisis.

Brunnermeier: Of course, we can wait until a crisis arrives and people suddenly claim that there is no alternative. But by then, both preparation and public acceptance are often lacking. That is why we should act now – not out of fear of change, but with the confidence that we can shape it. We should take pride in being agile, not only in preserving what already exists.

What is the core of your approach?

Brunnermeier: The individual is at the centre. Not the job. Not the product. Not the existing structure. Our goal is to strengthen people's capabilities and enable them to deal successfully with change. Human beings are not objects to be administered. They are learning beings capable of growth and development. At the same time, we do not see people as isolated individuals. They are part of a community. That is why they should not be left to cope on their own. A resilient society helps its members get back on their feet after setbacks.

Kolev: That is precisely why we see our approach as an update of the Social Market Economy. The Social Market Economy has always sought to combine economic dynamism with social stability. Today, that balance has to be recalibrated. Ultimately, resilience is an

attempt to think both together: dynamism on the one hand, security and social cohesion on the other. Not one or the other, but both at the same time. And the benchmark remains the same as it was for the founders of the Social Market Economy: the good life of the individual. ■

*“The individual is
at the centre.
Not the job. Not
the product.”*

Markus K. Brunnermeier

Markus K. Brunnermeier and Stefan Kolev

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The Prudent Enterprise

Data are abundant. Orientation remains scarce. Today's decisive competitive advantage lies not in access to information, but in the ability to make complex situations visible, understandable, and actionable.

“It is also known and evident that Your Majesty could not have obtained the Roman Crown without me ...”

From Jakob Fugger's admonitory letter to Emperor Charles V, 24 April 1523.

The Fugger family of Augsburg in the fifteenth and sixteenth centuries was not merely a banking and trading dynasty. It was a European network that connected trade, mining, lending, and politics through the systematic use of decision-relevant information. The Fugger Newspapers preserved from the years 1568 to 1605 demonstrate that information was not a peripheral activity within the House of Fugger. It was part of a European architecture of power and decision-making.

Professional news writers, known as novellants, collected reports, transcribed them by hand, and delivered them to paying subscribers. Their dispatches came from Europe's political centres, from aristocratic circles, particularly the imperial court and military theatres, but also from the Americas, North Africa, and Asia. Their focus ranged from political and military developments to treaties, religion, crime, and economic news.

Even the Fugger accounting system was more than bookkeeping. Research shows that the company operated more than a dozen branches and developed sophisticated governance and accounting practices to manage them. Accounting did not merely document revenues and expenditures after the fact. It made the Fugger enterprise governable – and, above all, decidable – across vast distances.¹ >

TEXT_ Lars Immerthal

Dr. Lars Immerthal is a strategy advisor and philosopher by training. For more than twenty years, he has supported companies facing complex decisions at the intersection of strategy, organisation, and leadership. Following senior positions in international consulting firms, including KPMG Germany, he now works with organisations of varying sizes and across multiple industries.

KEY MESSAGES

- **Strategic agency** does not arise from having more information, but from the ability to make complex situations actionable and decidable.
- **Decision architectures** determine what organisations perceive, which options they recognise, and how responsibility is assigned.
- **Perception, decision rights, decision media, options, and learning loops** are the key levers of organisational decisionality.
- **AI and data** increase organisational intelligence, but they do not replace judgement or contextual understanding.
- **Prudent organisations** create structures that preserve orientation, adaptability, and strategic effectiveness even under conditions of uncertainty.

Several types of decisions were particularly important:

- **Credit decisions:** Who should receive loans, at what level of risk, and against what collateral?
- **Political decisions:** Which prince, emperor, or pope was strategically relevant to the enterprise?
- **Mining and resource decisions:** Where should investments be made in copper, silver, or mercury?
- **Timing decisions:** When did capital, goods, or information need to be in a particular place?
- **Risk decisions:** Where were the threats of war, default, regime change, or transport disruption emerging?

The Fugger example reveals an early form of strategic decisionality. Credit, intelligence, political proximity, accounting, and networks were not merely resources. Together, they formed an architecture through which complex situations became observable and intelligible.

DECISION ARCHITECTURE: MAKING SITUATIONS VISIBLE AND ACTIONABLE

Today, information is delivered in real time and capital moves instantaneously. Precisely for that reason, decision architectures are becoming increasingly important. Their role is not merely to accelerate reactions, but to provide orientation in complex environments and preserve an organisation's capacity for strategy. Decision architecture determines whether an organisation can make its strategy visible, attributable, and effective in concrete situations.

A decision architecture encompasses the totality of conditions through which organisations – understood here as social systems and institutions – organise perceptions, options, evidence, roles, rights, media, risks, and feedback in a way that enables robust decision-making.² The question is therefore not merely who de-

cides, but how an organisation arrives at actionable choices: which information becomes visible, what counts as evidence, who bears responsibility, which formats shape decisions, and how learning occurs through feedback. As both a diagnostic and intervention concept, decision architecture reveals where decisionality is blocked and which conditions must change for organisations to regain their ability to act.

Decision architectures touch upon governance, organisational design, change management, strategic intelligence, and communication without being reducible to any one of them. These perspectives are not replaced but brought into relationship with one another, guided by a central question: How does an organisation become capable of making decisions?

FIVE LEVERS: WHERE DECISIONALITY EMERGES

The elements of a decision architecture must help transform situations into decision-ready conditions – making it possible to arrive at a sustainable yes, no, stop, go, scale, or kill despite uncertainty, conflicting objectives, and incomplete information. They are not a checklist. They indicate where decisionality is created – and where it is blocked.

1 ■ Perception and Information

Which signals are seen at all? Which data, news items, risks, early warnings, customer signals, or market movements actually enter the organisation?

2 ■ Roles, Rights, and Accountability

Who is authorised to decide? Who must approve? Who carries the risk? Who bears political, financial, reputational, or operational responsibility? This is where governance, veto logics, and ownership reside. GitLab's Directly Responsible Individual (DRI) prin- ➤

„Decision architecture determines whether an organisation can make its strategy visible, attributable, and effective in concrete situations.“

Lars Immerthal

ciple illustrates how decisions are assigned and attributed. Many people may contribute, but ultimately it is clear who owns the decision.

3. Decision Media

Through which formats are decisions made? Examples include memos, business cases, dashboards, board papers, reports, AI-generated summaries, ticketing systems, and scenarios. Decisions are never made directly. They are always mediated. Amazon demonstrates this through its narrative memos; Toyota through its A3 reports, which show how a problem is perceived, analysed, discussed, and transformed into a decision-ready situation.

4. Options and Possibility Spaces

Which options are considered conceivable? Who is allowed to create new possibilities? This is where the entrepreneurial dimension resides. Organisations do not merely choose between existing options; they also create new ones. Entrepreneurial momentum emerges precisely when new possibilities can be capitalised upon under conditions of risk – or even uncertainty.

5. Feedback, Learning, and Correction

How does the organisation determine whether a decision is working? Are there feedback mechanisms, escalation pathways, stop rules, after-action reviews, pre-mortems, or learning loops? And can learning itself be institutionalised within the decision architecture? Toyota illustrates this point particularly well. Through the production principles of Jidoka and Andon, disruptions are not concealed but immediately made visible and actionable. At Toyota, Jidoka refers to “automation with human judgement,” while Andon makes deviations visible. In this context, decision architecture means transforming problems into decision-ready situations at the earliest possible stage.³

MORE THAN CONTROL, MORE THAN INTELLIGENCE

Since the days of cybernetics, thinkers such as Stafford Beer have spoken of the intelligent enterprise. The idea refers to organisations whose decisions are regulated and increasingly automated, and which can adapt on the basis of feedback loops.

This form of control processes deviations, stabilises systems, and maintains direction. Decision architecture, however, asks an earlier question: How do situations become visible in the first place? How do options become actionable, reasons become legitimate, and responsibility become attributable? Control presupposes decisionality.

With digitisation, the internet, and AI, the intelligent enterprise has undergone a massive expansion of its infrastructure. Today, organisations can not only analyse data and identify patterns; they can also support search, forecasting, simulation, and innovation. This can create enormous competitive and efficiency advantages.

THE PRUDENT ENTERPRISE

Yet this is not enough. This is where the prudent organisation comes into view. It asks which decisions may be automated, where human judgement must remain indispensable, where dissent must be permitted, and where time, detours, or experimentation are required.

A prudent decision architecture creates the freedom for precisely these things. In complex and ambiguous situations, decisionality does not arise solely from intelligent infrastructure. It emerges from the ability to assess a situation, recognise one's own limitations, and make new possibilities visible in the first place.

Prudence therefore functions as a test of fitness. It examines whether a decision is appropriate, responsible, and effective within a specific context. To do so, it requires contextual knowledge – knowledge that does not simply emerge from data, but from experience, situational understanding, and a feel for the unique conditions of a particular circumstance. >

„In complex and ambiguous situations, decisionality does not arise solely from intelligent infrastructure.“

Lars Immerthal

ODYSSEUS: THE ARCHITECTURE OF SELF-BINDING

At this point, it is worth returning to Odysseus. For was it not Odysseus who, in order to remain capable of action, created a small architecture of self-binding? He wanted to hear the song of the Sirens – to gain knowledge about the world – yet he could not allow himself to follow it. His companions sealed their ears with wax. Odysseus understood that willpower alone would not suffice. He therefore had himself tied to the mast and instructed his crew not to release him, even if he demanded it. The navigability of the ship thus depended on an architecture created in advance: clear roles, clear rules, self-binding, and irreversibility in the moment of temptation.

Odysseus is prudent because he factors his own weakness into the situation. He is cunning because he does not confront the danger directly but instead structures the situation in such a way that effective action remains possible. This is central to decision architectures. Prudence does not consist merely in making the right decision. It also consists in creating the conditions under which one remains capable of deciding when knowledge, desire, risk, and danger pull in different directions.

The crucial capability here is the recognition that the direct path is not necessarily the only path. A detour is not a form of inefficiency. It becomes a form of strategic prudence whenever the direct route is blocked, dangerous, or ineffective.

EUROPE: MAKING DETOURS POSSIBLE

For companies operating in and from Europe, this insight is particularly important. Europe is no longer in a position to dominate global networks of capital, technology, and power on its own. Yet it is not powerless either. Precisely for this reason, European companies require decision architectures that fit their circumstances – not merely faster, more digital, and more controlled, but more prudent. Prudent decision architectures must allow detours without immediately labelling them as inefficiency, rule-breaking, or a lack of discipline.

They must create spaces in which people can search, deviate, disagree, experiment, and reassess. Not every deviation is inefficiency. Some deviations are the very path through which new possibilities become visible. This does not mean organisations should become arbitrary. On the contrary, a detour is prudent only if it preserves or restores decisionality. It requires responsibility and the courage to abandon unproductive paths when necessary.

That is precisely why the detour is not a romantic alternative to the efficient organisation. It is the task of decision architecture to permit it without sacrificing decisionality. In other words, the principle of culture must be allowed to challenge the principle of pure economic efficiency whenever doing so preserves or restores strategic agency.

ASML: WHAT EUROPE SHOULD MAKE POSSIBLE

ASML provides a powerful contemporary example – but not because Europe strategically planned the company from above. Rather, ASML demonstrates what becomes possible when a European company builds technological depth, ecosystem capabilities, customer proximity, and global relevance over an extended period of time.

The company illustrates that European agency depends not only on technology itself, but on the ability to keep technological bottlenecks, political power, supply chains, customer dependencies, and regulatory constraints strategically manageable. Export controls and questions of technological sovereignty do not influence the situation in an abstract sense. They directly affect demand, customer behaviour, and strategic room for manoeuvre.

ASML therefore does not prove that Europe already knows how to systematically identify, build, and retain such strategic assets and bottlenecks. Rather, it demonstrates what becomes possible when a company masters a situation technologically, organisationally, and ecosystemically to such an extent that it acquires global strategic relevance. >

„A detour is not a form of inefficiency. It becomes a form of strategic prudence whenever the direct route is blocked.“

Lars Immerthal

Europe's challenge is to create the situations and ecosystems in which such companies can emerge more frequently. That remains the missing piece. And this brings us back to the Fuggers. The Fuggers remind us that positions of power do not simply exist. They are created through architectures of credit, information, relationships, and influence. ASML demonstrates something similar today under very different conditions.

The decisive company is not necessarily the one with the most data or the most advanced AI application. It is the company capable of keeping bottlenecks, dependencies, technology, politics, and time itself decidable. In both cases, the central issue is architecture – the architecture that transforms information, judgement, timing, relationships, and power into strategic agency.

CONCLUSION: THE REALITY STRUCTURE OF THE ORGANISATION

Decision architecture is the reality structure of the organisation. It determines what becomes visible, what is regarded as relevant, which options appear conceivable, and where responsibility can be assigned. Every decision architecture illuminates certain aspects of reality – and obscures others. It makes decisions possible while simultaneously creating blind spots.

Prudent enterprises understand this. As a result, they do not merely improve decision-making processes. They also question the very forms through which they perceive, evaluate, and render reality actionable. Those who fail to reflect on their decision architecture easily confuse their own mode of perception with reality itself.

Prudent organisations therefore recognise – even in moments of success – that today's strength may become tomorrow's weakness. This is precisely what former Toyota CEO Koji Sato warned his suppliers about in March 2026: "Unless things change, we will not survive."⁴ ■

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“If You Cannot See Reality, You Cannot Respond to Change”

Strategic capability begins with honesty. Business psychologist and advisor Cristina Popa explains why companies often suppress uncomfortable truths, why uncertainty leads to poor decisions, and how leadership teams can learn to think clearly and act effectively under pressure.



Cristina Popa, why does a company need a strategy?

Cristina Popa: Companies need orientation. They need a strategic ambition, a shared direction, and, above all, something that simplifies decision-making. A good strategy does exactly that. It helps establish priorities and align resources in a focused way.

What is most important in this regard?

In the end, a strategy can be nothing more than a document. In some companies, that is exactly what it is: a carefully produced paper that has consumed considerable time and money. Strategic capability only becomes visible when reality creates pressure.

That happens, for example, when assumptions no longer hold, markets change, or new technologies call a business model into question. Geopolitical decisions can also suddenly have very concrete operational consequences. The debate over tariffs is a good example. A political decision made in Washington can force German automotive manufacturers to reassess pricing, sales planning, or profit margins within a very short period of time.

The real question then becomes: Is the company capable of acting? Can the leadership team accept reality? Can it openly address conflicting objectives and make decisions? And is it willing to reallocate capital and capabilities consistently when circumstances demand it?

So strategic capability begins with the perception of reality itself...

Absolutely. Many companies tend to downplay uncomfortable developments at first. Early warning signals are interpreted as isolated incidents. For me, strategic capability begins with taking those signals seriously.

That requires not only a genuinely internalised strategy but also close proximity to both the market and day-to-day operations. Yet this proximity is often lost at board and supervisory-board level, particularly when leadership teams do not speak openly about the organisation's actual situation. If you cannot see reality, you cannot respond appropriately to change.

Uncertainty seems to play a central role. How do leadership teams typically react to it?

Psychologically speaking, uncertainty is extremely demanding. It activates feelings of loss of control, status risk, and responsibility pressure. As a result, people often do not choose the strategically best response. Instead, they choose the response that calms their nervous system most quickly. I regularly observe three typical patterns. Some leadership teams respond with more control. They create additional reports, more governance mechanisms, and further coordination loops. Others primarily seek consensus. They try to eliminate disagreement because disagreement is exhausting and generates additional uncertainty.

And then there is actionism. New programmes, new initia- ➤

tives, new task forces. All of this creates the feeling of being in control and taking action. Yet the underlying conflicts and uncertainties often remain unresolved.

You spoke about the perception of reality. How much truth can a leadership team actually tolerate?

For me, this is primarily a question of relationships. Truth is always a kind of stress test for trust. The more stable the relationships within a leadership team, the more truth the system can tolerate. If, on the other hand, there are unresolved conflicts, unspoken tensions, or mistrust, things become considerably more difficult.

In addition, the personal condition of the individuals involved matters. Someone who has been operating under extreme pressure for months will respond differently to uncomfortable truths than someone who has sufficient stability and room for manoeuvre.

Why do traditional analytical and management models fail so often – and what makes your approach, “Fluid Strategy,” different?

The models themselves are not the problem. Analytical tools such as SWOT, PESTEL, or Five Forces certainly have value. They help structure complexity and organise thinking. The difficulty begins when these tools create a sense of certainty and control that has little connection to reality.

The actual challenges are often quite different. Uncertainty, conflicting objectives, difficult decisions, and power dynamics do not disappear simply because they have been entered into a model. For me, strategic capability emerges when organisations are willing to continually reassess their assumptions, incorporate new information, and adapt their decisions to actual developments. That is what we call Fluid Strategy.

What do you mean by “Fluid Strategy”?

Fluid Strategy means remaining clear under conditions of uncertainty without becoming rigid. It means staying adaptable without becoming arbitrary. The point is not to change strategy constantly. Nor should organisations cling to a plan at all costs simply because it was once adopted.

What matters is consistently linking strategic direction to reality. That requires an ongoing reality check: What was our original plan? How have the surrounding conditions changed

since then? And what do those changes mean for both our previous and our future decisions? This comparison between strategy and reality must become a leadership routine.

How does that work in practice?

For me, Fluid Strategy combines three elements: anticipating the future, remaining capable of action in the present, and learning strategically through experimentation. Many companies talk about experimentation and agility. The crucial question, however, is whether they are willing to act on what those experiments reveal. Developing scenarios is one thing. Actually implementing the resulting insights is something else entirely. Often, this means revising previous convictions or correcting decisions that have already been communicated internally or externally.

Does this require a particular type of leader?

Fluid Strategy begins with people. If leaders lack curiosity, openness, or a willingness to take risks, this approach is unlikely to succeed. Strategic capability emerges from the collective qualities of those who carry responsibility. Those who focus primarily on security, control, and personal self-protection will struggle to genuinely embrace new insights and draw conclusions from them – especially when those conclusions require a visible correction of their own previous actions.

Which qualities are particularly important?

Self-regulation. The ability to tolerate uncertainty without falling into actionism. Leaders must be able to make decisions even when not all information is available. At the same time, they must resist acting on every impulse simply to regain a sense of control. Anyone unable to manage this tension will fail, regardless of the quality of the methods being used.

Is Fluid Strategy more of an art or a craft?

For me, it is a combination of personality and craft. Methods matter, but they are not enough. What ultimately matters is the mindset of the people who shape and implement strategy. Only the combination of both makes organisations truly capable of strategy.

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Leadership teams are not only dealing with uncertainty but also with psychological biases. How can organisations prevent such mechanisms from influencing strategic decisions?

That is indeed one of the greatest challenges. Whether we are talking about confirmation bias, groupthink, or other cognitive distortions, these mechanisms often operate very subtly. And they cannot be overcome through good intentions alone. That is why I believe it is useful to systematise the psychological dimension more deliberately. Not everyone is a psychologist. But every leadership team can create structures that actively encourage reflection.

What might that look like in practice?

For example, by incorporating a fixed set of questions into decision-making processes on a regular basis. Questions such as: Are we confusing control with leadership? Or: How deeply in love are we with our own plan? The more a plan becomes part of an organisation's identity, the greater the danger of holding onto it even when reality has clearly moved in a different direction.

Another important question is: Which bad news have we failed to consider adequately today? Which risks may have been downplayed – or not voiced at all? Questions like these create space for self-correction.

Many executives would probably argue that the reality of business, capital markets, and regulation rewards stability rather than adaptability.

That is a valid point. Leadership does not operate in a vacuum. Capital markets often reward predictability. Regulation demands accountability and traceability. Internal governance systems tend to favour what is measurable and controllable. That is why Fluid Strategy is not about ignoring these realities. It is about enabling adaptability within those constraints. This can be achieved, for example, through strategic options rather than one-dimensional plans. Or through scenarios, early-warning indicators, and clearly defined decision windows that help leadership teams avoid reacting either too quickly or too late. Governance, too, should be understood less as a braking mechanism and more as an intelligent steering system. Not only by asking: Which risks must we avoid? But also: Which risks arise if we do nothing?

What mistakes should consultants avoid?

Fundamentally, the same mistakes that leaders should avoid. They should not act out of actionism simply because clients expect quick answers. They should not sugar-coat reality in order to sell certainty or secure an engagement more easily. And they should not automatically assume that they are the best experts for every challenge. I have taken on assignments while openly acknowledging that additional expertise would be needed for specific topics. That is not a weakness; it is professional responsibility. Particularly in complex times, honesty is often more valuable than claiming to already have an answer to everything.

What kind of honesty does Europe need right now?

A rather uncompromising honesty. Europe wants to catch up in the AI race. It is investing in data centres and AI factories and speaking about technological sovereignty. At the same time, we remain heavily dependent on non-European providers for critical components – whether chips, cloud infrastructure, or foundation models. The first step is to acknowledge that reality. We cannot credibly speak about sovereignty if key parts of the value chain remain controlled outside Europe.

Where do you see the greatest challenge?

Too often, we are still discussing processes while others are already acting. In Europe, we debate permits for data centres while facilities are already being built and scaled in the United States and China. We need to become more decisive. Of course, that also means consciously taking risks. At the same time, it is not enough to look at individual future technologies in isolation.

The energy demand generated by AI will increase dramatically over the coming years. If we talk about data centres, we must simultaneously talk about grid expansion, storage technologies, locations, cooling systems, and energy supply. Strategic priorities need to be considered together. In my view, that is precisely what is still often missing.

Many entrepreneurs are experiencing the current crisis with great uncertainty. Some even speak of hopelessness. What would you say to them?

First of all, I would want to understand who is sitting across from me. Not everyone needs the same answer. In general, >

however, I believe we often underestimate how many options for action we actually have. In times of crisis, it is easy to feel that there is only one possible path forward. That is almost never true.

If a company has the financial capacity and the courage to do so, a radical strategic repositioning may be appropriate. That could mean acquiring new technologies, purchasing start-ups, or systematically scaling back existing business units in order to free up resources. Most importantly, however, companies need to return to action.

Why is that so important?

Because actions create signals. And signals create confidence. When employees see that their company is actively shaping events rather than merely reacting to them, something changes. A sense of agency begins to return. And that sense of agency is often the first step out of hopelessness.

Many companies are waiting for political decisions. Is that a mistake?

At the very least, companies should not wait for politics alone to solve their problems. Businesses can and should actively represent their interests. If multiple actors within an industry face the same obstacles, they should approach policymakers together and advocate for concrete changes. Sometimes I have the impression that we accept political processes as fixed conditions that cannot be influenced. But political processes are also created by people. And what people have created can be changed by people.

You advocate a democratisation of strategy. That probably sounds unsettling to some executives. What do you mean by it?

I do not mean that strategic decisions should be made through direct democracy. That would be naïve and would blur accountability. For me, democratising strategy means something different: strategic perception must become broader. In many organisations, strategy is still developed within a small circle. It is then presented in town halls and translated into communication programmes. The problem is that the people closest to customers, technologies, and operational processes are often involved far too late. And that is exactly how important signals get lost.

If you could give a board of directors just one piece of advice to become more strategically capable, what would it be?

A disciplined leadership routine for testing strategic assumptions against reality. Leadership teams need dedicated spaces and dedicated time slots in which they systematically challenge their assumptions.

For example, by asking questions such as: Which core assumption underlying our strategy could be wrong? Which signals are we currently ignoring? Which developments are we still treating as exceptions even though they may already represent a pattern? Or: What would we stop immediately if we truly took reality seriously?

For me, there is no substitute for this kind of regular review.

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Cristina Popa is a business psychologist and entrepreneur with experience across industry, energy, technology, and the automotive sector. As a former partner in a renowned transformation consultancy, she was responsible for strategic programmes in digital transformation, organisational development, and leadership. Following roles including Interim CEO and Strategic Advisor to a technology start-up, she founded *controlSHIFT* and the corporate foundation *SHIFTsociety* in 2024. Her focus areas include decision architectures, leadership systems, and Europe's long-term capacity to shape its future.

What distinguishes you as a consultant from an AI?

Probably our humanity. Our experiences, our contradictions, and our ability to perceive things that do not always appear logical. I was born in Romania and came to Germany as a child. My family spent many years struggling for security and opportunity. Experiences like these shape the way one sees the world. Then there are personal encounters, professional experiences, and the observation of how irrational people and organisations often behave.

Many developments cannot be understood through data and algorithms alone. You understand them because you understand people. At the same time, I do not see AI as a competitor. Quite the opposite. We use it extensively and have automated a large portion of our operational processes. For me, AI is a valued team member, not an adversary.

If readers were to take away one thought from our conversation, what would it be?

Perhaps this: Strategic capability begins with honesty. Honesty about reality. Honesty about one's own assumptions. Honesty about dependencies, risks, and conflicting objectives. Those who recognise reality early and are willing to draw consequences from it gain room for manoeuvre. And that, ultimately, is what strategy is about: not perfect plans, but the ability to act effectively and make clear decisions even under conditions of uncertainty. ■

The Car Industry's Next Fatal Assumption About the Future

The greatest danger to companies is often not technological disruption, but assumptions that nobody questions anymore. The automotive industry has repeatedly misjudged electric drivetrains, batteries, and software. Now the next strategic mistake may be emerging.

In 2006, I presented the startup Tesla to Bosch, Continental, and other companies as a potential disruptor and threat. At the time, Tesla did not even have a car. People laughed. They kept laughing for another twelve to fifteen years – until the dismissed threat became reality. Today, the next potentially existential misjudgment is beginning to take shape.

1. History of False Assumptions 1.1 About the Future

Every strategy is built on assumptions about the future. Anyone who builds a factory is betting on future demand. Anyone who develops a drivetrain is betting on future technology. Anyone who outsources capabilities is betting that those capabilities will not become business-critical tomorrow.

Assumptions about the future are not forecasts. They are the basis for decision-making. They substitute for knowledge about a future that cannot be known with certainty. There is nothing wrong with an assumption turning out to be incorrect. The problem arises when it was poorly founded, insufficiently challenged, or not regularly reviewed and updated. That is where fatal strategic mistakes begin.

1.1 First False Assumption: If Necessary, We Can Easily Switch to Electric Drivetrains

This was the prevailing view among traditional manufacturers. After all, they had been building cars for more than a century and were considered the benchmark for quality and performance. If anyone could simply install a different type of propulsion system, surely it would be them. The car was still seen primarily as a >

TEXT_ Pero Mičić

Dr. Pero Mičić is CEO and founder of FutureManagementGroup AG. He works as an author, keynote speaker, and management consultant, and serves as Professor of Foresight and Strategy at Steinbeis University Berlin. He earned his doctorate from Leeds Business School in the United Kingdom in 2007 with a dissertation on the methodology of futures management.

KEY MESSAGES

- **Strategic failures** are usually caused not by poor strategies but by false or unexamined assumptions about the future.
- **The automotive industry** long underestimated the importance of electric drivetrains, batteries and software.
- **The next major mistake** may be to view autonomous vehicles as merely conventional privately owned cars.
- **Robotaxis** could shift mobility from an ownership model to a usage model, significantly reducing vehicle sales volumes.
- **Companies** should make their assumptions about the future explicit, challenge them regularly and test them.

mechanical product. Take out the engine, put in a new one, and the job is done. But an electric vehicle is not simply the old car with a different motor. It requires a different architecture, a different cost structure, a different manufacturing strategy, a different software logic, and a different value chain. All of that would have had to change at once. No company can do that overnight.

1.2 Second False Assumption: We Can Simply Buy Cheap Batteries from China

At first, this sounded rational. Why manufacture something yourself if others can do it more cheaply? Especially when batteries appeared to be a relatively simple component with little strategic importance.

But the battery became the central cost element, a key performance factor, and a major differentiator. Companies without sufficient battery expertise do not control a crucial part of the electric vehicle. Companies that cannot purchase batteries at scale benefit too little from the dramatic cost reductions in batteries – more than 90 percent over the past fifteen years.

1.3 Third False Assumption: The Car Will Remain Mechanical Engineering with a Bit More Software

This assumption was rarely stated explicitly. It was implicit and largely invisible. Yet vehicles became increasingly software-defined. Software became as important as hardware. Today, software is at the core of both the customer experience and, in part, the business model itself.

Companies that merely purchase and integrate software rather than mastering it internally become existentially dependent on others. They are also unable to deliver true over-the-air updates that reach deep into vehicle control systems. The reason is that those control units and many other components come from hundreds of suppliers who are understandably reluctant to disclose their know-how, since doing so could undermine their own business models.

1.4 Fourth False Assumption: Outsourcing Most Activities Will Continue to Be the Right Strategy

For decades, the established value-creation model was to design and market vehicles while purchasing 70 to 80 percent of the components from a multilayered supplier network. Suppliers delivered the innovations that manufacturers could market as their own. At the same time, suppliers could be subjected to considerable price pressure. A low level of vertical integration was considered a winning formula.

Then Tesla and BYD arrived as highly vertically integrated companies, controlling roughly 80 percent of the value creation within the vehicle themselves. They can make decisions faster, act faster, and avoid many coordination costs. Suddenly, yesterday's success formula became a disadvantage.

1.5 Fifth False Assumption: The Chinese Will Not Build World-Class Cars Anytime Soon

Very similar things were said about Japanese manufacturers in the 1970s and 1980s. They could produce cheaply. They could imitate. But quality, innovation, and brand strength – that was supposedly beyond them. Until Toyota became the global benchmark for quality.

Today, the pattern is repeating itself with China – only faster. The consequences are visible first among suppliers. Many of these companies spent decades perfecting components for the world of internal combustion engines: precise, reliable, and highly specialized. That was their strength. Now it has become their vulnerability. The weakness of the traditional automotive industry is not a temporary cyclical downturn. It is a profound structural transformation.

1.6 Sixth False Assumption: Vehicle Prices Can Continue Rising Indefinitely

Vehicle prices had never declined. They rose continuously. Manufacturers – and therefore suppliers – were always under enormous cost pressure. The objective, however, was profitability. No major player had ever set out to reduce prices in a meaningful way. It simply was not necessary and therefore seemed inconceivable. Tesla made price reductions a strategic objective and lowered prices repeatedly. The arrival of Chinese manufacturers, with their significant cost advantages, triggered the next wave of price pressure.

Western manufacturers first lost substantial market share in China itself, then in other Asian countries, as well as in South America and Africa. Tariffs have so far prevented Chinese manufacturers from entering the U.S. market on a large scale, and European customers remain relatively cautious. The electric vehicles offered by traditional European manufacturers have now reached a good level of quality and performance. Yet in some cases they are priced as much as 50 percent higher than comparable vehicles from Chinese competitors.

In Europe, one often hears that demand for electric vehicles is falling short of expectations. In reality, EV sales continue to grow by 25 percent or more per year. The reality is that demand for >

the expensive vehicles of the legacy automakers is too small. The claim that demand is lacking in general is simply not true.

Here is a polished English version in the same style and register as the previous translation:

2. The Future and the Sixth False Assumption About the Future

The sixth – and perhaps most consequential – false assumption about the future is this: autonomous vehicles will remain cars that people buy, lease, insure, wash, park, and leave standing idle for 23 hours a day. The only difference is that they will occasionally drive themselves. Everything remains essentially unchanged. The customer buys a car. The manufacturer sells a car. The dealer delivers a car. The workshop services a car. The bank finances a car. Everyone remains comfortably within the reality they already know.

That may prove to be the next great illusion. Today, in the United States and China, around 1.5 million paid robotaxi rides without drivers are already taking place every week. At its core, fully autonomous mobility has largely been solved. If robotaxis become available within minutes, are clean, safe, reliable, and cheaper per mile or kilometer than owning a private vehicle, then car ownership may shift from being a symbol of freedom to becoming an unnecessary expense for many people.

More than 90 percent of the time, our vehicles are essentially parked vehicles. No entrepreneur would accept an expensive machine that remains unused for more than 90 percent of its lifetime. That is precisely why each kilometer driven is so costly today. Robotaxis reverse this logic. They stop only for charging, cleaning, and maintenance. As a result, acquisition costs, insurance, maintenance, and operating expenses are spread across many more kilometers, dramatically lowering the cost per trip. Robotaxis are also likely to be more convenient and virtually worry-free. No parking. No insurance. No tires. No service appointments. No car washes. No parking tickets. Users simply pay for the kilometers they travel – at significantly lower cost than today.

A blind person gains spontaneous mobility. An eight-year-old can travel to volleyball practice three times a week without relying on parents for transportation. A ninety-four-year-old can visit a childhood friend without needing a driver's license. This is not merely a technological advance; it is an improvement in quality of life. Of course, not everyone will give up private car ownership. Yet it is foreseeable that, over the long term, significantly less than half of today's vehicle volumes will be sold.

In a robotaxi world, manufacturers will no longer control the value chain. A manufacturer that merely supplies vehicles risks

becoming a dependent supplier to the mobility platforms that operate the robotaxi fleets and control customer access. For the traditional automotive industry, this would be a more profound disruption than the transition from internal combustion engines to electric vehicles.

3. Achieving Greater Future Resilience

Companies rarely fail because of foolish strategies. They usually fail because of false or unexamined assumptions about the future. Which assumptions must prove correct for your strategy to succeed? Which assumptions are merely hopes? Which assumptions are so comfortable that they should arouse suspicion? Which assumptions have become so deeply embedded in your industry that nobody even articulates them anymore? Which of those assumptions would fail to withstand rigorous scrutiny?

That is where the most dangerous errors are found. Make your assumptions about the future visible – and therefore testable. Simulate attacks on your own business model. Ask yourself: How would we destroy our current business if we were our most dangerous competitor?

That is the essence of business wargaming: simulating attacks on your own business model, identifying blind spots, and turning those insights into opportunities. The automotive industry has repeatedly placed the wrong bets. Make sure your company does not. ■

“Which assumptions are merely hopes? Which assumptions are so comfortable that they should arouse suspicion? Which assumptions have become so deeply embedded in your industry that nobody even articulates them anymore?”

Pero Mićić

“The Full Scale of the Transformation Has Not Yet Sunk In”

The German automotive industry is undergoing the most radical transformation in its history. Software and AI are fundamentally changing the rules of the game. Automotive expert Stefan Bratzel discusses the industry's strategic mistakes, the car as a smartphone on wheels, and Germans' changing relationship with one of their most cherished cultural icons.

Stefan Bratzel, the automotive industry has experienced technological upheavals before – from the combustion engine to electronics and electric mobility. Why do you see the transition to software- or AI-defined vehicles as particularly dramatic?

Several major transformations are converging at the same time. Electrification is not simply a matter of replacing the combustion engine with an electric motor. It involves entirely new value chains, particularly in battery cell production and the associated supply networks. In addition, there are challenges related to charging infrastructure and energy systems. That alone represents a tremendous undertaking. At the same time, we are witnessing the

transition to the software-defined vehicle. This includes automated driving, new digital services, and, increasingly, AI-defined functions. Meanwhile, the competitive landscape is changing fundamentally. Chinese manufacturers, in particular, are becoming increasingly influential. Added to this are geopolitical uncertainties, supply-chain disruptions, and highly volatile market conditions. The software-defined vehicle is once again transforming the industry's value chains from the ground up. Traditionally, the automotive sector has its roots in mechanics and electronics. Software long played a supporting role. Today, however, success depends on centralized computing architectures, operat- ➤



INTERVIEW_ Stefan Bratzel

Prof. Dr. Stefan Bratzel is founder and director of the independent research institute Center of Automotive Management (CAM) at FHDW in Bergisch Gladbach. An automotive economist, he specializes in the future of mobility, innovation trends in the automotive industry, and the role of major technology companies. Following positions at smart, Group3G, and PTV, he has become one of Germany's most respected and frequently cited experts on the automotive sector.

KEY MESSAGES

- ➔ **The automobile** is evolving from a vehicle into an intelligent node within a larger digital ecosystem.
- ➔ **Batteries, software, and artificial intelligence** are becoming the key technologies of future mobility.
- ➔ **Manufacturers** risk being reduced to the role of hardware suppliers if they lose control over software, data, and AI.
- ➔ **Autonomous driving** could reshape the automotive industry much as the smartphone transformed telecommunications.
- ➔ **Younger generations** increasingly evaluate vehicles by their digital features rather than by engine performance.

“The industry’s mood is somewhere between depression, uncertainty, and a sense of new beginnings.”

Stefan Bratzel

ing systems, and the ability to continuously develop software. For manufacturers and suppliers alike, this represents a profound transformation.

How does this transformation differ from previous waves of innovation?

For decades, automotive manufacturers operated largely within their own universe. They defined the rules themselves. The automobile was built around a set of established paradigms: the combustion engine, human driving, and private ownership. These assumptions were rarely questioned. Today, however, entirely new types of players are entering the industry. Mobility platforms such as Uber operate according to fundamentally different business models. They do not think in terms of vehicle ownership but in terms of usage, platforms, and data.

At the same time, major technology companies have moved into key control points of the new value chain. Alphabet, Microsoft, Nvidia, and others are playing increasingly important roles. Similar developments can be observed in China, where large technology groups are becoming central actors in software, data processing, and artificial intelligence. This creates considerable turbulence for traditional automotive manufacturers.

What challenges does this create for companies?

I often describe it as the “CoCoCo challenge” (CoCoCo). The first “Co” stands for competencies. Companies must develop entirely new capabilities in areas such as software engineering, data management, and artificial intelligence. At the same time, they must learn to let go of activities and mindsets that were once central to their success. Unlearning is often more difficult than learning.

The second “Co” stands for cooperation. Automotive manufacturers have traditionally worked with suppliers in clearly defined relationships. Today, they increasingly need to collaborate with technology companies that are sometimes larger and more powerful than they are. This requires entirely new forms of partnership.

The third “Co” stands for culture and organization. As automotive manufacturers evolve into software- and AI-driven companies, their ways of thinking, processes, and organizational structures must evolve as well. Software development operates differently from traditional vehicle development. It is faster, more iterative, and considerably more dynamic. Ultimately, these three factors can become knockout factors. Companies that fail to develop the necessary competencies, partnerships, and cultural capabilities risk being pushed out of the market. That is

why I consider this transformation genuinely disruptive.

You are in close contact with manufacturers and suppliers. How would you describe the mood in the industry today?

Somewhere between depression, uncertainty, and a sense of new beginnings. For decades, many companies were accustomed to operating in a relatively predictable environment. That is no longer the case. The comfort zone has disappeared, and that is clearly noticeable.

China provides a good example. Before the pandemic, Volkswagen generated annual profits of four to five billion euros there. Today, those profits amount to only a fraction of that figure. Developments like this inevitably create uncertainty. In the past, manufacturers could rely on launching a new model every few years that looked somewhat different from its predecessor but left the underlying business model largely unchanged. Today, the pace and intensity of change are much greater.

New competitors – especially from China – are entering the market. Many of them have already mastered key future technologies and continue to strengthen their positions. As a result, there is a growing realization that it is no longer sufficient to do the same things better. Companies must do different things. The industry is in the middle of that transition.

What does this mean for employees?

For many employees, the transformation is also deeply personal. When the skills in which you have excelled for decades suddenly lose importance, uncertainty is unavoidable. An engineer who has spent an entire career developing mechanical systems now sees software and data becoming the

central sources of value creation. That can feel like an identity crisis.

At the same time, the full scale of the transformation has not yet sunk in everywhere. Some people tell themselves that they only need to make it through the next five years before retirement. The reality, however, is that the industry is facing a profound transformation that will affect manufacturers and suppliers alike.

Did the industry walk into this situation with its eyes open?

Yes, I think that is a fair assessment. The first major turning point was Tesla. When the Model S was launched in 2012, many people in the industry were genuinely impressed. Before that, there had already been the Roadster, which virtually every senior automotive executive had test-driven at some point – including then-Volkswagen CEO Martin Winterkorn. Many were positively surprised. Suddenly, electric mobility was no longer associated with a glorified mobility scooter; it was exciting and desirable.

Yet Tesla was never truly taken seriously. Most executives saw a small electric-vehicle manufacturer selling relatively few cars. It did not appear strategically relevant. The real wake-up call came later. On the one hand, the diesel scandal shook the industry's self-confidence. On the other hand, the launch of the Model 3 demonstrated that Tesla could move beyond niche volumes into the mass market. Suddenly, Tesla was no longer selling a few thousand vehicles. It was reaching significant scale.

Even then, however, denial remained widespread. Many found reasons to dismiss Tesla as a serious threat. The company was not profitable, its busi-

ness model was questionable, and so on. At the same time, the industry massively underestimated developments in China. The Chinese manufacturers were visible, but few believed they could evolve into technologically sophisticated competitors within such a short period of time. That proved to be a significant misjudgment.

So the industry's problems are strategic?

Yes, in many cases they were strategic mistakes. There was a certain degree of hubris. The established manufacturers had been successful for decades and believed they had plenty of time. They saw the new technologies emerging, but they were convinced they could always react later. As a result, crucial investments were not made early enough. A good example is the battery cell. I remember a conversation with then-Daimler CEO Dieter Zetsche several years ago. I asked him why Daimler was not manufacturing its own battery cells. His response, in essence, was that battery cells were a commodity – a standardized product that could simply be sourced from suppliers. Looking back, that was a major strategic mistake. A significant share of innovation and value creation resides in the battery cell itself. By the time manufacturers realized how dependent they had become, it was far more difficult to recover lost ground. A similar pattern emerged with charging infrastructure. Tesla invested early in its own charging network. Many European manufacturers considered that unnecessary. Today, it is clear what a significant strategic advantage Tesla created for itself.

Is there a risk that the same thing could happen with autonomous driving?

That risk certainly exists. Over the next decade, autonomous driving will be-

come a major driver of new business models and value creation. Many of its implications are still difficult to fully assess today. In autonomous mobility services – robotaxis and autonomous shuttles, for example – we are already seeing a substantial gap. Waymo is the leading player in the West and now conducts hundreds of thousands of commercial rides each week. In China, Apollo Go has also made significant progress. Both systems already operate without safety drivers.

Europe remains years behind. Volkswagen is relatively active in shared mobility, but largely through partnerships. Mercedes-Benz and BMW are primarily focused on autonomous driving for privately owned vehicles. Overall, Europe lacks the necessary momentum. Autonomous driving also requires enormous investment. Companies such as Waymo continue to lose billions of dollars annually despite their operational success. We are therefore dealing with a scale of investment that goes far beyond what many European funding programs currently contemplate.

Earlier you mentioned new value chains. Who will control the critical parts of that value chain in the future?

That is precisely the key question. The danger is that automotive manufacturers lose control of the industry's critical leverage points. In artificial intelligence, the leading foundation models come from the United States and China. In semiconductors, companies such as Nvidia dominate. Cloud infrastructure and operating systems are also largely controlled by American technology firms. Europe has strong individual companies such as Infineon, Bosch, and Siemens. But it lacks players of comparable scale in these crucial digital >

“The battle over software, data, and artificial intelligence is therefore, at its core, a battle over the future role of the automotive industry itself.”

Stefan Bratzel

domains. As a result, there is a real risk that a growing share of value creation will occur outside the traditional automotive industry.

If you look ten years ahead, will the automotive business still fundamentally be a vehicle business?

That is a very important question. For years, we have discussed the scenario in which automotive manufacturers gradually become little more than hardware suppliers. Vehicles would still be produced, but the most valuable parts of the business would lie in software, data, operating systems, and digital services.

That risk remains very real. If other companies control the critical technologies, manufacturers may ultimately be left with the task of producing the hardware. Yet that role alone is unlikely to support today's cost structures. The battle over software, data, and artificial intelligence is therefore, at its core, a battle over the future role of the automotive industry itself.

There is currently much discussion about new business areas, including partnerships with the defense industry. Could that provide a way out?

These are interesting developments, but they do not alter the fundamental challenge. Of course, individual projects

can generate revenue. They may also help utilize some excess production capacity. But compared with the scale of the transformation underway, these initiatives are secondary. They may soften certain impacts, but they will neither compensate for major losses in value creation nor preserve employment on a broad scale.

For the industry, they are more like small bandages on deep wounds. The central challenge remains the technological and strategic repositioning of the sector in an era of software- and AI-defined mobility.

The automobile has always held enormous cultural and emotional significance in Germany. With the rise of the AI-defined vehicle, is it possible that not only the technology but the very nature of the automobile is changing?

That is a fascinating question. I do believe that the paradigm of automobility is changing. Perhaps the best comparison is the transition from the traditional telephone to the smartphone. Of course, we can still make phone calls with an iPhone. But making calls is no longer its primary function.

Something similar is happening with the automobile. We will continue to drive cars. But the vehicle is increasingly becoming a connected digital device.

It communicates with its environment, with infrastructure, with the electricity grid, and with the home.

In the era of electric mobility, we will see growing adoption of vehicle-to-home and vehicle-to-grid applications. Cars will store energy and, when needed, feed it back into homes or the grid. They will become part of a broader digital and energy ecosystem. At the same time, entirely new forms of interaction are emerging. Even today, I occasionally talk to my car and ask it for recommendations for the evening. In the future, AI systems will know their users extremely well. They will understand their surroundings, habits, and preferences, and generate increasingly relevant suggestions. This transformation creates enormous opportunities. The car will remain a car – but it will become part of a much larger system.

Will this also change people's emotional relationship with the automobile?

Yes, I believe so. Among younger generations in particular, we are already observing a different attitude. My own children always found new test vehicles interesting. But when a Tesla first appeared in our driveway, their reaction was noticeably different. Suddenly, they were no longer interested in horsepower or vehicle design.

Instead, they asked: Has there been a new software update? What new features have been added? That illustrates how a new type of relationship with the vehicle is emerging. The automobile is increasingly perceived not simply as a machine, but as a digital platform.

Does the automobile no longer hold significance for young people?

It still matters, but in a different way. When I turned eighteen, getting a driver's license was one of the most

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important milestones imaginable. People were willing to sacrifice many other things in order to afford their first car. Today, I see that priority far less often. My own children enjoy driving. But they have never asked me when they would finally own a car of their own. If a car is available, they use it. Yet ownership itself is no longer the central aspiration. The automobile is now one interest among many. It competes with smartphones, streaming services, travel, and countless other digital experiences for people's attention and resources. For many years, we have asked consumers what they would be willing to give up in order to afford a car. The answers have changed significantly. People today are far less willing to sacrifice other aspects of their lives for vehicle ownership. Of course, if there is an attractive car parked outside, people are still happy to drive it. But the emotional attachment has become weaker.

I remember a survey we conducted when the iPhone first entered the market. We asked a simple question: Which would you rather give up – your car or your smartphone? The answers were surprisingly clear. That illustrates how dramatically priorities have shifted. The automobile remains important, but it no longer automatically occupies the center of personal identity.

What strategic choices must German manufacturers make to succeed in this environment?

We need to act on two levels simultaneously. First, we must catch up. In several key technologies, we have fallen behind. This applies to battery cells, software capabilities, and artificial intelligence. We need to regain lost ground. But catching up alone will not be

enough. Second, Germany and Europe must once again move ahead of the technological wave. For decades, our success was built on technological leadership. That leadership allowed us to command premium prices. If competitors are now equally innovative – or in some areas even more innovative – then that model no longer works. That is precisely what we are experiencing today. It is therefore not sufficient merely to close existing gaps. We must move into areas where we can once again define technological standards and shape the next wave of innovation. What that next wave will look like remains an open question. But that is exactly what the coming years will be about. Only by rebuilding positions of technological leadership can Germany and Europe secure their industrial strength over the long term.

Will future innovation even be about the car itself?

Innovation is already extending far beyond the vehicle. Of course, considerable innovation will continue to take place within the car. But the vehicle is increasingly becoming part of a larger system. It is a connected device – an internet-enabled device – linked to energy systems, infrastructure, and digital platforms.

Entirely new business models will emerge from this. Perhaps automotive manufacturers will one day generate revenue by integrating the batteries of their vehicle fleets into the power grid. Initial examples of this already exist. What seems certain is that future value creation will extend far beyond the traditional automobile.

Does Germany perhaps need a truly severe automotive crisis before the necessary changes happen?

I would phrase it differently. We are already in the middle of a dramatic automotive crisis. Perhaps we resemble the famous frog in slowly heating water. Because this transformation is unfolding over many years, many people no longer fully perceive its scale. But we are currently experiencing the most significant crisis in the automotive industry since the Second World War. Tens of thousands of jobs have already been lost among manufacturers and suppliers. The broader economic consequences – in tax revenues, regional prosperity, and industrial ecosystems – will become increasingly visible over the coming years.

One only has to look at current developments. When Volkswagen announces additional multi-billion-euro cost-cutting programs through 2030, that inevitably means reductions in employment, supplier contracts, and investment spending. The consequences will extend far beyond the automotive sector itself.

What do you expect from policymakers?

The most important task for policymakers is to create the right framework conditions. Over the past several years, Germany has clearly lost ground in the competition for investment within Europe. The evidence is visible in the growing number of investments flowing to other countries. The challenges are well known: high labor costs, high energy costs, excessive bureaucracy, and insufficient investment in future-oriented capabilities. These are fundamental questions of competitiveness that have been discussed for years. The last major structural reform effort now lies roughly two decades in the past. If we fail to address these issues, targeted subsidy programs will have only limited impact. Of course, >

“What we need are deeper reforms – even if they are politically difficult.”

Stefan Bratzel

we can discuss incentives for new technologies. But if the underlying conditions remain unfavorable, such measures will not be sufficient. Fuel rebates and similar initiatives do not solve structural problems. What we need are deeper reforms – even if they are politically difficult.

Despite everything, is there anything that gives you hope?

Yes. The positive development is that manufacturers now have a much greater awareness of the challenges they face. Many companies have recognized the need to close their technological gaps, and some initial successes are already visible. In electric mobility, German manufacturers have made substantial technological progress. Vehicles such as the new Mercedes CLA, BMW's Neue Klasse, and current Volkswagen models demonstrate that the necessary engineering capabilities remain intact. The challenge lies more in cost structures than in technological competence. In addition, companies today are far more open to cooperation than they were only a few years ago. Partnerships with technology firms or Chinese manufacturers would once have been almost unthinkable. Today, companies understand that such collaborations may be necessary to accelerate progress. That gives me reason for optimism. But catching up alone will not be enough. We need

greater dynamism. We need to leave our comfort zone behind and once again pursue technological leadership.

Perhaps what is missing is simply a sufficient sense of urgency?

Sometimes pain helps. But pain alone is not enough. If people cannot see a path forward, pain merely remains pain. The real problem is the comfort zone. Many of us still live with the assumption that things will somehow work out. The state will help, problems will be cushioned, and we will manage to get through. That mindset remains widespread. Many people assume that the fundamental changes will only become relevant later. Yet that is precisely what makes the situation dangerous. Perhaps greater pressure is indeed necessary before people fully recognize that we must once again take responsibility ourselves and become more willing to embrace change. What I hope for, however, is not fear. It is curiosity. A stronger desire to develop new technologies, explore new approaches, and take risks. Innovation always involves uncertainty. One never knows in advance whether an idea will succeed. But that uncertainty is also where opportunity resides. If we can rediscover our enthusiasm for the future – for entrepreneurship, technological progress, and the excitement of turning new ideas into reality – then something very positive can emerge. That is where I place my hope. ■

A woman with short blonde hair and glasses, wearing a bright red blazer over a white patterned top, stands with her arms crossed against a light-colored wall. The background is slightly blurred, showing an indoor setting with a doorway.

Connect, Don't Just Administer!

Europe possesses knowledge, capital, technology, and strong institutions. What it lacks is the ability to translate existing capabilities into coordinated action.

Europe plans together, deliberates together, issues joint declarations – and then often acts separately. The real challenge is not a lack of knowledge or resources, but their strategic integration. This is Europe's strategic paradox: despite having knowledge, resources, and institutions at its disposal, it often struggles to transform them into collective action. Research, industry, government, and the military continue to operate according to largely separate logics, even though strategic impact depends precisely on their connection. The decisive lever today is therefore not more analysis, better planning, or additional resources. It is the ability to connect existing knowledge and translate it into integrated action.

THE INTEGRATION GAP

The great challenges of our time – geopolitical competition, technological disruption, migration, demographic change, and climate change – cannot be mastered by any single discipline, ministry, institution, or nation. Yet we continue to organize knowledge largely along precisely those lines. Governments operate through ministries. Companies through departments. Universities through faculties. Professional careers are built on specialization. This division of labor creates necessary depth. At the same time, it creates the silos that make strategic foresight and coordinated action more difficult.

Specialization remains indispensable. Its strategic value emerges only when knowledge circulates across disciplines, institutions, and levels of decision-making. The critical resource of modern societies is therefore not information itself. It is the ability to translate information into collective action.

THE INDIVIDUAL

The internet, digitalization, and especially artificial intelligence are changing the meaning of expertise. Knowledge is by no means becoming irrelevant, but access to it is becoming easier. Specialized information, sophisticated analyses, and even highly complex relationships are now available at a speed that would have been unimaginable only a few years ago. Precisely for that reason, the decisive capability is shifting from possessing knowledge to using it wisely. When information is available everywhere, judgment becomes more valuable.

Strategic thinkers are distinguished not merely by the depth of their expertise, but by their ability to critically assess, connect, and translate different bodies of knowledge into decisions.

A practical example comes from defense. The introduction of new technologies rarely fails because of technical shortcom- >

TEXT_ Anke Allenhöfer

Dr. Anke Allenhöfer is Lead Counsel Germany at Helsing, the Munich-based defense technology startup that develops AI-enabled military systems. In 2001, she was among the first female officer candidates in the German Armed Forces and has remained active as a reserve officer ever since. She currently serves as a Legal Advisor to NATO Allied Air Command in Ramstein-Miesenbach.

KEY MESSAGES

- **Europe's greatest strategic deficit** is not a lack of resources, but the failure to integrate them effectively.
- **Strategic impact** emerges where knowledge is connected across disciplines, institutions, and nations.
- **In the age of AI**, judgment matters more than access to information; what is needed are bridge-builders between domains.
- **Germany and Europe** require stronger cross-ministerial and cross-sector decision-making structures.
- **Integration** is not an administrative task – it is a core strategic capability of modern power.

ings. More often, it fails because legal, operational, and technological requirements are brought together too late – and by actors who do not speak the same language. What is missing is not more specialists. What is missing are people who can translate between worlds.

In military terminology, these are strategic enablers: individuals who multiply the effectiveness of others. In a networked society, they are the people who can bridge domains – between technology and politics, science and practice, business and security. They understand the language of multiple worlds and can communicate insights from one domain in ways that create action in another.

THE INSTITUTION

At the institutional level, the same pattern reappears on a larger scale. Germany's current challenges – energy and security architecture, industrial transformation, migration, technological competitiveness, and the crisis of democratic institutions – are all inherently cross-sectoral. Yet they are often addressed within separate administrative domains whose organizational logic makes it difficult to see the broader system.

Germany also faces a more specific challenge: both public administration and much of the political class are shaped by legal thinking. Administrative and political decision-making cultures are strongly oriented toward procedural certainty and legal safeguards.

This has strategic consequences. Legality becomes the dominant logic of action where strategic effectiveness should be the priority. Speed, technological judgment, and political ambition risk being pushed into the background. Legality is indispensable. But it cannot substitute for strategic thinking.

Strategic action requires the simultaneous consideration of legal, technological, economic, and security-related factors. Where procedural certainty becomes the overriding objective, speed, technological understanding, and strategic purpose inevitably suffer. For questions of security and foreign policy, Germa-

ny would therefore benefit from an institutional framework that enables permanent cross-ministerial analysis and decision-making. A body modeled on the U.S. National Security Council could not simply be copied. But it could help integrate foreign, security, economic, technology, and research policy into a more coherent strategic framework.

EUROPE

At the European level, the ability to integrate becomes an existential question. Europe has twenty-seven armies, twenty-seven procurement systems, and twenty-seven sets of national priorities. Taken together, they represent considerable strength in quantitative terms – but they operate far below their strategic potential.

This is perhaps the most visible symptom of the European Union's incomplete integration of defense policy and military strategy. None of the major geopolitical challenges of our time can be addressed by any European state acting alone. Neither technological sovereignty, economic security, defense, nor geopolitical competitiveness can be organized effectively on a purely national basis. The challenge is to translate these fragmented capabilities into collective action.

The United States links government, military, academia, and industry comparatively closely. China has elevated the integration of these domains to a matter of state strategy. Europe, by contrast, remains institutionally fragmented in many critical areas. National responsibilities, differing priorities, and complex decision-making procedures make it difficult to develop common strategic capacity.

European debates often focus on resources, budgets, and capabilities – particularly in defense. Yet the greatest leverage lies not in these assets themselves, but in their connection. Joint projects and collaborative research remain limited in their impact if they are not supported by shared strategic priorities and integrated decision-making processes. >

“Strategic action requires the simultaneous consideration of legal, technological, economic, and security-related factors.”

Anke Allenhöfer

RETHINKING STRATEGY

Structures can be changed – but only if the people who inhabit them change the way they think. Europe needs greater connectivity of knowledge and stronger integration of action. It will continue to need specialists who are world-class in their respective fields. But it also needs people and institutions capable of translating between those fields.

The ability to integrate is therefore becoming a strategic resource in its own right. It determines whether existing knowledge, technology, economic strength, and political influence remain isolated assets – or become a source of collective impact. As long as we treat integration as an administrative task rather than as a core strategic capability, we will continue to deploy our strengths below their true potential.

The defining resource of the twenty-first century is therefore not information alone. It is the ability to connect people, institutions, and knowledge in ways that generate strategic effect. ■

“The ability to integrate is therefore becoming a strategic resource in its own right.”

Anke Allenhöfer

Europe's Flawed Career Logic

For years, Europe has debated how to retain technology talent. Yet the real problem may be deeper: Europe's understanding of career success often discourages innovation. Why Silicon Valley's approach to technical careers gives it a decisive advantage.

Anyone trying to build world-class technology teams in Europe today will recognize a familiar pattern in many résumés: strong technical or academic beginnings, a promising early career – and then a transition into management, followed by the gradual erosion of technical expertise. There is nothing inherently wrong with this. Every organization needs capable managers.

But the pattern points to a larger problem. Compared with the United States, Europe offers a less favorable environment for building exceptional, long-term, highly focused technical careers. Technical excellence at the highest level is neither recognized nor rewarded to the extent that it should be.

This is one of the blind spots in Europe's AI strategy. We are not losing talent only to Silicon Valley or the hyperscalers. We are losing it to a system that defines management as advancement and technical expertise as a dead end. Yet any technology sector that aspires to global leadership needs an environment in which technical depth and scientific excellence carry the same status as managerial responsibility.

Anyone who has worked in international teams knows that there is no fundamental difference in intellectual talent between the world's leading countries. Europe does not suffer from a shortage of talent or education. The problem lies in career structures and organizational strategies. >

TEXT_ Jonas Andriulis

Jonas Andriulis is an entrepreneur and AI researcher with nearly two decades of experience at the forefront of artificial intelligence. His career includes senior roles at Apple and the founding of several technology startups, including Aleph Alpha. In early 2026, he founded CNTR, a Frankfurt-based collaborative AI company, in partnership with Roland Berger.

KEY MESSAGES

- **Europe's talent** challenge is not primarily educational – it is rooted in career structures and incentives.
- **Many organizations** continue to treat management as the default path to status, influence, and higher compensation.
- **Technical excellence** should enjoy the same visibility, prestige, and rewards as leadership responsibility.
- **Europe** needs stronger technical career tracks if it wants to compete in AI, quantum computing, and advanced software engineering.
- **The most exceptional technology** talents are often motivated not by management, but by the opportunity to build great technology.

THREE PATHS FOR EXCEPTIONAL TECH TALENT

In my view, anyone pursuing a top-tier technology career in Europe faces three typical paths after completing their education and establishing a strong professional foundation.

1. Retreat into Comfort: The first path is to scale back ambition and settle into a stable and comfortable career. This is a perfectly legitimate life choice. Not everyone wants to invest the years of effort required to become truly world-class. For Europe, however, the result is often a workforce with solid capabilities but one that remains noticeably removed from the global frontier.

2. Move into Management: This is the standard career path in many German companies. One particularly strong candidate once described it to me very clearly. He had an impressive technical background and precisely the experience required for a demanding technology role. When I asked whether the position appealed to him, he replied that he was already in a leadership role. For him, returning to a technical position would feel like a step backward. That answer reveals the underlying incentive problem.

In Europe, moving from a technical track into management is still widely regarded as the natural next step. Management is instinctively associated with advancement, status, and higher compensation. As a result, precisely those individuals whose expertise is most valuable are pulled away from technical work – just when Europe most urgently needs them in fields such as artificial intelligence, quantum computing, and advanced software engineering. This is not merely a human resources issue. It is a strategic problem. As long as management remains more closely associated with status, influence, and financial rewards, Europe sends a clear message to its top technical talent: true success means eventually leaving the technical track behind.

3. The Technical Career: The third path is also the most demanding. It is the path of deep technical specialization – and it must become a far more prominent and equally valued strategic model across Europe. Success on this path requires more than talent and perseverance. It requires an environment specifically designed to enable excellence: outstanding colleagues, experienced mentors, and a culture that visibly recognizes technical authority. Many young talents are looking for exactly that environment. Too often, they do not find it in Europe. Instead, they move to the U.S. technology sector, where such roles are more established, more visible, and more highly valued.

WHAT THIS MEANS FOR EUROPEAN AI COMPANIES

If European organizations want to retain their strongest technical talent, they need dual career ladders that allow experts to rise to the highest levels without being pushed toward management. Technical excellence must carry the same status, visibility, and compensation as leadership responsibility. Anything less creates a predictable talent drain. Anyone attempting to build a technology team capable of creating genuinely transformative technologies will inevitably encounter outstanding candidates whose ambitions are primarily managerial. In many cases, such candidates may simply not be the right fit.

Great technology companies deliberately create environments in which a world-class technical career is considered the natural path. One question I often ask candidates is this: “Which part of your work do you enjoy so much that the thought of focusing on it exclusively feels almost overwhelming?”

That is where the focus should be. Whether the answer is management or technical excellence, it should be possible to build an extraordinary career around it.

A NECESSARY CULTURAL SHIFT

What Europe needs is both a cultural and a strategic shift within its organizations. We must move away from career models that reflexively place management above expertise and toward organizations where the best minds can work on the hardest problems while receiving the same recognition as executives and managers.

And incidentally, among the most exceptional technology talents I have ever met, the answer to that question was always the same: *“I want to build great technology.”* ■

How AI and Data Will Influence Decisions in the Future

Artificial intelligence can accelerate decision-making—but only if the underlying data is trustworthy. Why Data & AI Trust is becoming the critical foundation for secure and effective AI in the enterprise.

By Armin Müller, Regional Vice President for Central Europe at Veeam Software

82 to 1 – according to recent findings, this is the average distribution of identities in a larger enterprise.

For every human working in such a company, regardless of position, skills, roles, and rights, there are roughly 82 machine identities. Even if this ratio might sound dystopian at first glance, it is not – quite the opposite. After all, every person in the company uses their AI colleagues to complete tasks more efficiently and effectively, to automate workflows, and to make more informed decisions. At least, that is the ideal scenario. However, the necessary prerequisites are not always in place to ensure that all of this happens securely, without errors or hallucinations. Therefore, the biggest challenge companies currently face is that of trust: How do you create the right conditions to be able to implicitly trust AI in the enterprise?

The Pitfall of the Data Deluge

In many ways, AI has unleashed the potential of corporate and organizational data. Instead of being limited by human access and reading speeds, AI is capable of truly registering, compiling, and processing all data present in the ecosystem – and doing so at machine speed. Thus, instead of merely working with the information accessible to a human based on their role and associated rights as before, an agent or an AI additionally handles, for example, the entire ERP, CRM, etc. However, it is precisely from these foundational conditions that the greatest risk arises: that the AI makes an incorrect decision at machine speed. Companies still struggle with AI incorporating errors and hallucinations into its own decisions

and results. The more data used as a foundation, the more difficult it can be for the responsible human to even detect such errors and hallucinations and to reverse the resulting damage accordingly. To eliminate this risk, it is necessary to establish the conditions that allow humans to trust AI 100%. This, in turn, only works if this trust is already firmly anchored in the underlying data before the AI ever accesses it.

The True Backbone of Artificial Intelligence

When secure and trustworthy AI is discussed today, the focus is often still on the wrong things, such as infrastructure or agents. But anyone who focuses solely on these elements and works on them is pursuing a purely reactive strategy to secure their AI ecosystem. Those who wish to act proactively instead must tackle problems and risks at their root: the data underlying the AI ecosystem. Specifically, four cornerstones must be established as the foundation for Data and AI Trust:

- Develop a **deep understanding** of data
- **Understand the context** traveling with the data (e.g., identity, policies, access)
- **Real-time enforcement** of policies before the AI accesses data
- **Precise remediation** of problems and errors through targeted recovery

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KI-Compliance erfordert Data- und AI-Trust

The volume of data being produced – especially unstructured data – has risen massively since the large-scale integration of AI-based technologies and will continue to grow in the coming years. To manage this volume, AI is essential. This makes it all the more important to guarantee trust in both, which is where the fundamental concept of “Data and AI Trust” comes into play.

To strengthen trust at the data level, one must first understand what is required to achieve it. Companies must understand their data at a granular level, as well as the context that accompanies it – across multiple domains, identities, and the entire lifecycle. Trust initially requires understanding and transparency, and subsequently, the ability to act within the runtime environment. In addition to foundational understanding, trust also requires that necessary policies take effect before the agent can even access the data.

Furthermore, it is essential to remain capable of acting even if an error does occur. In this scenario, turning back the clock a few days is not an option; especially in large enterprises with thousands of agents, such a step would drive productivity into a wall. Instead, Data Trust also requires companies to be able to remediate errors precisely. Thus, instead of jumping back several days, only the seconds that have passed since the error occurred should be reversed.

Without Trust, the AI Engine of Growth Stutters

The existing volume of data is growing exponentially, while more and more machine identities are finding their way into companies to unleash these very data volumes at machine speed. This is intended to enable more efficient work and better decision-making. But anyone aiming to navigate this technological and economic quantum leap optimally and securely cannot rely on traditional security concepts and processes.

AI breaks through the traditional perimeter of Zero Trust and requires proactive action at the data level. Those who fail to guarantee trust at this data level and continue to employ a merely reactive approach will not only get worse results from AI. In the worst case, actively wrong decisions will be made at a speed no human can keep up with. Only those who manage to ensure trust in their own data and establish precise recovery mechanisms for emergencies will be able to safely unlock the full potential of AI. ■

Armin Müller is Regional Vice President Central Europe at Veeam. Prior to joining Veeam, he held senior leadership positions at Broadcom Software, VMware, and Oracle, and also worked for IBM and T-Systems. Throughout his career, he has been responsible for driving growth, cloud transformation, and enterprise strategy initiatives across Europe. Müller holds an MBA from Henley Business School and a degree in Business Administration (Diplom-Kaufmann).

From Signal to Decision

Crises rarely emerge out of nowhere. More often, the decisive signals are visible long in advance– in politics, regulation, or international markets. The challenge is to draw the right conclusions for supply chains, procurement, and corporate decision-making.

Roughly one fifth of the world's traded oil and a substantial share of seaborne liquefied natural gas pass through the Strait of Hormuz. For European refineries and energy providers – and, indirectly, for every industry whose inputs or energy costs depend on this route – it is one of the most vulnerable points in the global supply system. On 22 June 2025, the day of the American Operation Midnight Hammer against Iranian nuclear facilities, the Iranian parliament voted to close the strait as a possible retaliatory measure. On the same day, the probability of a closure before the end of the year, as traded on the prediction market platform Polymarket, rose from 33 to 52 percent within a single day. Anyone responsible that evening for supply chains running through Hormuz faced a specific date, a sharply increased probability, and a parliamentary resolution. The signal was documented and publicly available to anyone looking for it. Just over eight months later, at the end of February 2026, the strait was in fact blocked during a renewed military escalation, with immediate consequences for European energy supplies and freight routes.

What happens between such a signal and a company's decision? In many cases, too little. The reason is a structural gap.

The missing capability is one that is still not firmly embedded as a core function in many companies: the ability to interpret a geopolitical event early enough and translate it into the company's own operational context before it reaches the business through the supply chain. This translation is more demanding >

TEXT_ Anja Opitz

Dr. Anja Opitz is a political scientist and an expert in geopolitical risk, resilience, and strategic decision-making. For more than twelve years, she has headed the Department of International Relations and Security Policy at the Academy for Civic Education. As former President of the Global Health Security Alliance, she combines perspectives from security, public health, and business. For the past twenty-five years, her work has focused on how geopolitical developments can be translated into concrete leadership decisions – before they affect supply chains, markets, or business models.

KEY MESSAGES

- **Signals** are usually visible. The challenge for companies is to assess their significance correctly.
- **Critical risks** often lie deep within supply chains and are frequently detected too late.
- **Resilient companies** act before a crisis materialises– they establish alternatives before shortages occur.
- **New legislation** is increasing the pressure to act: supply chain and security risks are becoming an increasing responsibility of corporate leadership.

“The need to identify and consolidate such signals at an early stage has long been recognised as a challenge in the security community.”

Anja Opitz

than it sounds. It requires relating a distant event – a parliamentary decision in Tehran, an export regulation in Beijing, a financing decision in Washington – to the company’s specific dependencies, and determining what action is required, and by when. Where this capability is lacking, an event either goes unnoticed or only becomes a decision point once it has already occurred and room for manoeuvre has narrowed.

This act of translation is the central challenge, and developments in security policy illustrate how rarely it is carried out reliably. Even institutions whose sole purpose is to perform this task continue to have blind spots. The need to identify and consolidate such signals at an early stage has long been recognised as a challenge in the security community, and the responses remain both contested and incomplete. Structures designed to combine different streams of intelligence into a common situational picture do exist, but they operate under the same constraints of limited resources and competing priorities that complicate preparedness more generally.

The Ebola outbreak that has been unfolding in the Democratic Republic of the Congo and Uganda since May 2026 illustrates this with particular clarity. International health financing, which for years had been a key pillar supporting surveillance and early warning systems in the region, had been significantly reduced from the beginning of 2025 onwards. The consequences of this decision were foreseeable, and expert organisations have cited it as one reason why the outbreak was detected late (International Rescue Committee, May 2026). By the time the outbreak was officially reported, it had already reached hundreds of suspected cases. A readable signal – the foreseeable weakening of preparedness – was not translated into timely action, even at the level of states and international organisations created precisely for that purpose.

What this translation actually requires, and where success or failure is decided, can be seen clearly in two examples from healthcare and pharmaceutical supply.

Example 1: The supply of methylphenidate, the principal active ingredient used to treat ADHD, has been fragile in Germany since 2024, as documented by the BfArM’s drug shortage database. The underlying mechanism is particularly instructive because a regulatory decision itself became a driver of the supply crisis. In June 2023, the European Medicines Agency introduced stricter limits for nitrosamine impurities, a justified response to a recognised health risk. Compliance with these limits requires additional release testing, tying up manufacturers’ analytical capacities and delaying product release. The measure intended to reduce a health risk therefore also contributes to supply shortages. Methylphenidate is by far the dominant active ingredient in ADHD treatment; the usual alternative, atomoxetine, covers only a small share of treatments and has itself become unavailable because a Greek manufacturer suspended production in August 2024 due to quality deficiencies. Some projected supply disruptions extend into the spring of 2026.

Example 2: Benzathine benzylpenicillin. At the beginning of 2026, the German Federal Ministry of Health introduced a temporary emergency regulation in response to looming shortages of the antibiotic benzathine benzylpenicillin. Emergency salbutamol inhalers for asthma patients have also been scarcely available on a reliable basis for almost two years. According to an analysis by the Central Research Institute of Ambulatory Health Care in Germany (Zi), a total of 1,514 drug shortage notifications were recorded in 2025 (January 2026 analysis).

What makes these cases particularly revealing is the pattern they expose: a readable political or regulatory signal, visible well in advance, is not captured by conventional approaches. In the >

“Bureaucratic and political constraints are real, but a measure of additional flexibility would not diminish them.”

Anja Opitz

first case, the regulatory signal – the new impurity limits – was publicly available long before the supply crisis emerged. The critical dependency that resulted lay deep within the supply chain, namely in the question of who could still manufacture the active ingredient under the new requirements. As such, it remained below the threshold of conventional risk management, which tends to focus on prices and delivery times.

The same logic applies beyond healthcare. In 2025 and 2026, China imposed export controls on rare earth elements and high-performance magnets – critical inputs for the automotive industry, wind power, defence technologies, and semiconductors. In early 2026, the G7 and several other leading economies strengthened their cooperation to reduce dependence on Chinese sources. The mechanism differs from the pharmaceutical case: in the case of methylphenidate, scarcity is the unintended side effect of a safety measure; in the case of rare earths, it is the deliberate instrument of geopolitical power. Yet the pattern of overlooked lead indicators remains the same. In both cases, the signals were documented: the new impurity limits had been in place since 2023, while the export controls had been announced well in advance. In both cases, the critical dependency lay deep within the supply chain – at the second, third, or fourth tier, beyond the reach of conventional risk management. The broader lesson is transferable: integrating parallel signals into decision-ready intelligence is an organisational capability that can be planned, developed, and practised.

Two conclusions follow. First, this challenge cannot be solved once and for all – neither in security policy nor in the international health architecture. What makes it even more difficult is limited resources and the low priority typically assigned to threats that have not yet materialised.

Second – and this is the crucial point – the business community possesses a strength that governments recognise but rarely exploit themselves: the habit of making decisions under uncertainty and adjusting course without waiting for certainty. Security policy could profitably adopt more of this agility without compromising its own integrity. Bureaucratic and political constraints are real, but a measure of additional flexibility would not diminish them.

For a growing number of companies, legislators have now made the management of such risks a legal obligation. Since 6 December 2025, Germany’s revised BSI Act, implementing the European NIS2 Directive into national law, has been in force. Section 30 requires affected companies to establish risk management measures explicitly based on an all-hazards approach and identifies supply chain security as a separate obligation. The all-hazards approach refers to information systems exposed to risks ranging from cyberattacks to physical disruption, while the supply chain requirement addresses the security of direct suppliers. Section 38 of the same Act places personal responsibility on executive management: it must approve the measures, oversee their implementation, and is personally liable, including with private assets, in cases of culpable breach. The KRITIS Umbrella Act, in force since 17 March 2026, complements these requirements by strengthening the physical resilience of critical infrastructure, explicitly citing growing geopolitical tensions as a reason for its introduction.

As a result, the documented management of these risks has become a board-level responsibility for the companies concerned – primarily medium-sized businesses operating in critical sectors. Regulation provides the trigger; the underlying question is why action is necessary now. For all other companies, however, the task remains one of resilience and economic prudence. No >

“The relevant signals are usually available in plain sight. The real challenge lies in assessing and translating them.”

Anja Opitz

legislation relieves them of this responsibility, and it is no less urgent because it is voluntary.

The law defines the obligation without prescribing how it should be fulfilled. Two important gaps remain. The first is organisational. Depending on a company's size, regulatory requirements are distributed across different functions – IT security, compliance, risk management – each producing its own report on its own area of responsibility. None of the regulatory frameworks explicitly requires these individual perspectives to be consolidated into a single, decision-ready situational picture, and in practice responsibility for doing so is rarely assigned to one clearly accountable function.

The second gap is methodological, and it is the more significant one. The law requires companies to document their risk management, and supervisory authorities expect a transparent assessment of relevant risks. It does not explain, however, how a company should translate a distant event into its own operational context and derive well-founded courses of action from it. Yet precisely this translation is the demanding task that stands between signal and decision.

For companies, the challenge of integrating multiple signals can be translated into a strategic logic that distinguishes between what must remain stable and what must remain adaptable. The objective remains fixed: safeguarding security of supply and preserving the organisation's ability to act. The path towards that objective must remain flexible because it responds to signals that continue to evolve. A supply chain dependent on a single manufacturer in an unstable region is rigid; one that has prepared alternatives before they become necessary is adaptable. This capacity to remain agile under conditions of uncertainty is the advantage business has over the public sector – and it is the decisive lever here.

The bottleneck is rarely access to information. As the examples show, the relevant signals are usually available in plain sight. The real challenge lies in assessing and translating them: identifying which one among a hundred simultaneous developments is likely to affect a company's supply chain six months from now, and documenting that assessment in a way that supports a well-founded decision. This is precisely the process required by law, although the law offers no guidance on how to carry it out. Whether a signal becomes a timely decision depends on this capability.

This brings us back to 22 June 2025. What happens between a readable signal and a corporate decision is the act of translation that connects the two: recognising the signal, assessing its significance, and turning it into a reasoned and documented decision. The signals available that day were there for anyone to see. Whether a company recognises them and translates them into preparedness is decided in the time before the strait is closed. This capability can be developed in advance, and preparing it is a responsibility of corporate leadership that no law can assume on its behalf. ■

Europe's Hidden Strength

Manufacturing already knows how humans and machines can work side by side. The AI transformation is its moment to prove it.

“An ounce of prevention is worth a pound of cure.”

Benjamin Franklin

Ask a senior executive about their company's operating model, and they will explain how the human organization works. Ask how AI agents fit into that model, and most will hesitate. That hesitation is now the norm. It needs to change. Today, most organizations treat AI agents as technology, as projects, or at best as products.

An agent is none of those things. Agents perform tasks that were previously carried out by humans. They work alongside people, support decisions, and act on behalf of those who direct them. In practice, that makes them members of the workforce. Yet none of the operating models currently in use were designed for that reality.

HOW WE GOT HERE

Different industries have developed different answers to the question of how work should be organized – and that diversity is entirely legitimate. Manufacturing found its discipline through Lean Thinking and Six Sigma: mapping processes, eliminating waste, standardizing workflows, and systematically embedding quality into operations.

Most importantly, manufacturing has spent decades operating in hybrid environments. Human workers collaborate with robots under clearly defined role boundaries, established exception protocols, and continuous improvement cycles. Achieving this required substantial organizational redesign. But it also produced something of lasting value: a proven model for integrating machines into human workflows. >

TEXT_ Romina Medici

Romina Medici leads Digital Platforms & Data Strategy at ERGO Group AG (Munich Re). Over the past decade, she has built and scaled AI and data transformation programs across European enterprises, most recently as the executive responsible for data and AI across more than forty business units in seventeen countries at E.ON. She is currently developing a practical framework for organizations navigating the transition to hybrid human-agent workforces.

KEY MESSAGES

- **AI agents** are becoming part of the workforce and therefore require a new operating model.
- **The success of AI** depends less on technology than on processes, roles, and governance.
- **Agentic AI** challenges a foundational assumption: cognitive work and judgment are no longer exclusively human domains.
- **The manufacturing sector's** experience in coordinating humans and machines can serve as a blueprint for the AI transformation of knowledge work.
- **Europe's real AI advantage** lies in its experience organizing and governing hybrid human-machine systems successfully.

Knowledge work has learned from manufacturing before. Agile methodologies, which transformed software development in the 2000s, drew directly from Toyota's Lean principles – the same discipline of waste reduction, continuous improvement, and clear ownership that European manufacturing had already embedded into its operations. That transfer worked. It reshaped an entire industry.

Yet knowledge work adopted the philosophy while leaving much of the rigor behind: the documented processes, role clarity, and quality discipline that manufacturing takes for granted. The agent transformation is not a new leap. It is the next stage of a journey that began long ago. And this stage is urgent.

In an agent-driven world, the new currency is computational capacity and decision quality operating at machine speed. Poorly designed processes handed over to agents will produce mediocre outcomes at scale – faster than any human team can correct them.

THE EXPIRED ASSUMPTION

Manufacturing already challenged the assumption that all machines are merely tools – but only within limits. Industrial robots were assigned fixed roles, confined physical spaces, and narrowly defined, predictable tasks. Operating models adapted by treating them as equipment, not colleagues. No industrial robot was ever expected to interpret an ambiguous instruction, adapt midway through a process, or exercise judgment over a supplier contract.

Agents do all of these things. They operate not in physical space but in cognitive space – the realm of decisions, language, interpretation, and judgment that was once considered exclusively human. They interact, adapt, and act in contexts that cannot be physically constrained.

The analogy to industrial robotics therefore only goes so far. It also points toward what comes next. Humanoid robots that combine physical presence with cognitive agency will eventually bring both dimensions into the workforce simultaneously. The operating-model challenge is therefore not tied to any specific technology. It emerges wherever cognitive work is shared with non-human systems. For most organizations, that reality already exists today.

The expired assumption is more specific than “the workforce is human.” It is this: Decision-making, judgment, and interpretation belong exclusively to people. That assumption is no longer true. And no operating model currently in widespread use was designed for a world in which it is false.

THE EVIDENCE

The consequences are visible in the data. A 2025 MIT study examining 300 real-world AI implementations found that 95 percent of AI pilot programs generated no measurable impact on profit and loss. BCG reported that 60 percent of organizations fail to create material value from AI despite continued investment. Gartner predicts that more than 40 percent of agentic AI projects will be abandoned by 2027. These are not technology failures. McKinsey found that organizations redesigning workflows before selecting AI solutions are twice as likely to achieve financial returns. Most organizations do the opposite.

PERFECTLY SOLVING THE WRONG PROBLEM

The pattern behind these numbers is remarkably concrete. One large company spent more than a year developing an AI-powered system for high-stakes trading decisions. The technology worked. Its recommendations outperformed the human baseline. By every technical measure, the system was successful.

YET IT REMAINED UNUSED.

Traders could not determine where their own judgment fit into the process. The system provided answers, but no framework for deciding when to follow them and when to challenge them. If something went wrong and their name appeared on the decision, what exactly had their role been? The technology was technically correct – and organizationally stranded.

Right technology. Wrong operating model. What the traders needed was not more trust in the system. They needed calibrated trust: an operating model that explicitly defines where human judgment begins and where agentic support ends, ensuring that reliance on AI remains informed rather than blind.

WHAT MANUFACTURING ALREADY KNOWS

Franklin's principle applies directly here. The ounce of prevention means mapping the process before an agent touches it. The pound of cure is rebuilding governance after failures have already accumulated. Manufacturing learned this through decades of practical experience. The Lean principle is simple: stabilize and map the process before automating it. Automating an inefficient process does not improve it. It accelerates inefficiency.

McKinsey's findings confirm the same principle in AI terms: redesigning workflows before selecting AI doubles the likelihood of achieving financial returns. Three assets from manufacturing are directly transferable. Three corresponding questions must be answered before any agent deployment.

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The first is deep domain expertise. Manufacturing employees understand their processes well enough to define precisely what a machine should optimize for – and where human judgment must take over. Knowledge work requires the same depth. Who defines what the agent is optimizing for? Is that intent documented? And is it owned by domain experts rather than by the technology team? In most organizations today, objectives are still defined informally, without governance or traceability.

The second is documented role clarity. Every position in a mature manufacturing environment comes with a defined description of responsibilities within a human-machine context. Knowledge work lacks this equivalent for agents. Who is accountable for an agent's output – in an operational sense, not merely a compliance sense? The equivalent of the machine operator role in manufacturing does not yet exist at scale in knowledge work.

The third is process documentation. Manufacturing depends on rigorously mapped processes – the foundation that makes automation safe, auditable, and scalable. Knowledge work must build the same foundation before handing tasks to agents. Which decisions belong to humans? Which belong to agents? Which require both? These boundaries must be documented, not assumed – and continuously revised as both technology and organizations evolve.

THE ADVANTAGE EUROPE HAS YET TO USE

Western Europe operates 267 robots per 10,000 manufacturing employees – ahead of North America with 204 and Asia with 131, according to the IFR's World Robotics Report 2025. Germany alone operates 449 robots per 10,000 employees. Eight European countries rank among the world's top twenty in robot density. These are not merely industrial statistics. They demonstrate that European industry has spent decades developing the organizational capability to manage hybrid human-machine workforces.

The protocols for role clarity, exception handling, human oversight, and continuous process improvement in mixed environments are not theoretical in Europe. They are operational, embedded in industrial culture, and transferable. Of all major sectors, manufacturing has developed the strongest governance infrastructure for AI, with more than half of manufacturers already operating dedicated cross-functional AI implementation teams – a systematic approach that many other sectors have yet to build.

The dominant narrative portrays Europe as cautious, slower than U.S. and Chinese competitors in adopting AI, and therefore

“The critical question for agentic AI is who builds operating models that make deployment sustainable.”

Romina Medici

at a disadvantage. That framing confuses speed with capability. The critical question for agentic AI is not who deploys fastest. It is who builds operating models that make deployment sustainable. The organizations moving fastest today are often accumulating governance debt at almost the same pace as their technical progress.

Europe possesses something more durable than speed: a model for integrating machines into human work, forged in environments where failure carries immediate and measurable consequences. Applying that knowledge to the agent transformation – the Lean discipline of process-first implementation, the role clarity that manufacturing takes for granted – is Europe's distinctive and still underutilized opportunity.

The knowledge already exists. The decision to apply it has not yet been made. Franklin understood that every early investment saves many times its value later. The organizations and societies that build a new operating model today will gain something more valuable than a competitive advantage. They will have a foundation on which future progress can be built. ■

“There Is an Enormous Amount of Wishful Thinking”

Germany spends a great deal of time debating bureaucracy, weak execution, and political gridlock. For IT executive Anke Sax, however, this diagnosis does not go far enough. The real problem lies deeper: many challenges are recognized, but not fully understood in their consequences.

Anke Sax, many people argue that Germany has an execution problem. Do you agree with that diagnosis?

Anke Sax: Only partly. Of course we have an execution problem. The real question, however, is whether that is actually our core problem. My argument is that we primarily have an insight problem.

What do you mean by that?

We understand that things are changing. We see economic growth slowing, China becoming stronger, and geopolitical risks increasing. But there is a significant difference between noticing something and truly understanding it. I often compare it to smoking or a lack of exercise. Most people know intellectually that smoking is harmful. Yet they do not change their behavior. Often, that only happens once the consequences become directly tangible. That is why I believe we have not yet fully grasped the scale of many of the challenges we face.

Where do you see this insight problem most clearly?

Almost everywhere. In the climate crisis. In the pension debate. In discussions about the future of the welfare state. In artificial intelligence. We recognize these issues, but we often underestimate their implications.

Can you give an example?

Take digital transformation. Many people say, “We need to digitize.” That sounds straightforward. What is often overlooked is that new technologies also change processes, alter employee roles, and ultimately transform business models. Or consider the regulation of critical infrastructure. The consequences may be that companies reassess markets, calculate product costs differently, or make entirely different business decisions. Those are precisely the implications many people prefer not to see.

Does the same apply to AI?



INTERVIEW_ Anke Sax

Dr. Anke Sax is an experienced executive specializing in the integration of IT strategy, cultural transformation, and modern technologies. Most recently, she served as Managing Director (COO/CTO) of the investment and asset management company KGAL. Holding a doctorate in business informatics, she has received numerous distinctions, including European Digital Leader 2020 and CIO of the Year 2019.

KEY MESSAGES

- **Germany’s greatest challenge** is less an execution problem than an insufficient understanding of many issues.
- **Organizations and societies often treat symptoms** instead of analyzing the root causes of their problems.
- **Wishful thinking**, denial, and attachment to familiar patterns frequently stand in the way of necessary change.
- **Sustainable transformation** rarely emerges from individuals alone; it requires alliances that make insights visible and enable collective action.
- **The methods for successful transformation** already exist. What matters is the willingness to take responsibility and act.

Absolutely. AI is often presented as a solution to everything. What is easily forgotten is that AI requires high-quality data – both for training and for ongoing operation. If that data is missing, even the best technology will not help. Then you need data governance, robust processes, and clear responsibilities. That is hard work. And that is exactly the point at which many people start looking for shortcuts.

So the challenge is more complex than it appears at first glance?

Very much so. Most problems are multi-causal. It is not enough to adjust a single variable. You have to look at the entire system. That applies just as much to companies as it does to broader societal challenges.

Change takes time.

Absolutely. Nobody goes jogging three times and suddenly becomes fit. If you do not change your diet as well, very little will happen. The same is true in organizations.

What is missing?

An honest diagnosis. Many people recognize symptoms but fail to identify the underlying cause. If employees stop giving feedback, there are different ways to interpret that. Perhaps everything is running smoothly. Or perhaps people have simply given up. The crucial question is: What is the real problem?

Is that what you mean by an insight problem?

Exactly. Many people look for someone to blame – markets, employees, unions, Trump, Putin, or other external factors. But before developing solutions, I first need to understand what is actually going wrong. Only when I have correctly identified the problem can I begin thinking about what might work in the market.

Where do the biggest mistakes occur?

At almost every stage of the process. In the analysis of the current situation, in the vision of the future state, and in the path between the two. The diagnosis is often superficial. The target vision is frequently not ambitious enough. And when it comes to moving from the current state to the desired state, organizations often lack consistency and discipline. If you want to become fitter, you need a training plan, you need to change your diet, and you need to measure progress. That structured approach is exactly what I often find missing.

Psychology tells us that people tend to hold on to their beliefs even when reality suggests otherwise. Why is that?

Because there is an enormous amount of wishful thinking. Many people believe that more of the same will eventually work. They have already invested so much time, energy, and effort that giving up feels impossible. I am not immune to this myself.

If I am analytically convinced that something should work in theory, I have a tendency to push even harder to make it happen. But what is theoretically possible is not automatically possible in practice. People, organizations, and external conditions always play a role. That is something we have to learn to accept.

Strategic decision-makers often seem trapped in the paradox that it takes a catastrophe to prevent a catastrophe.

Yes. That is exactly why this topic fascinates me so much. For years, I have been trying to understand why change succeeds – or fails. The more I read and think about it, the more convinced I become that many problems are never truly understood. That is when people start treating symptoms. They become

hectic, panicked, or completely paralyzed. But they do not engage with the underlying problem itself. I sometimes compare it to the stages of grief described by Elisabeth Kübler-Ross.

Why?

Because denial comes first. People do not want to accept reality. Perhaps what is needed is a form of exposure therapy. We need to confront problems rather than constantly trying to avoid them.

Could Germany's real problem be that things are not yet bad enough?

Yes. Absolutely. I believe we still live with the assumption that things will somehow sort themselves out. That a fuel subsidy, rent controls, or a few redistribution measures will be enough, and then everything will return to the way it was before. I do not believe that will work.

At what point does the pressure for change become strong enough?

Honestly, I do not know. I do not have an answer to that question. If I did, I would probably apply it all the time. What I do observe, however, is that it is not enough for individuals to recognize the problem. It takes alliances. It takes people who are willing to take a public stand.

Is that courage missing?

Often, yes. In private conversations, many people agree with me. Colleagues, employees, works council representatives. I often heard: You are right. We need to change. But as soon as the discussion becomes public, many disappear. What is missing is the so-called first follower – the person who stands up and says: Yes, this is true. We are going to take this path together.

So do we need more alliances?

Exactly. Right now, everyone is danc- ➤

ing in their own field. The IT community. Small and medium-sized businesses. Academia. Politics. Everyone debates within their own environment. I do not believe there are too few people who recognize the challenges. The problem is that they are not connected to one another. As long as that remains the case, no real movement can emerge.

Does change require pain before it becomes possible?

Unfortunately, it often does. Take climate change. Many people only began paying serious attention once the consequences became more visible – floods, heatwaves, landslides. Or consider fuel consumption. Many people only changed their behavior once gasoline became significantly more expensive. As long as most people are doing reasonably well, the pressure for change remains limited. And that is what concerns me.

What gives you hope that we can still change?

I am fundamentally an optimistic person. Above all because we already possess the necessary knowledge. We have methods, tools, and experience. We know how change works. We have trainers, coaches, leaders, and researchers. We have people who know how to take someone weighing 150 kilograms and prepare them to run a marathon. In the same way, we have people who know how to guide organizations and societies through difficult transformations. The know-how exists. We simply need to apply it.

What role do politics and major leaders play?

Of course they matter. But I think we often overestimate their importance. Many people wait for the chancellor, the CEO, or some other authority figure to

solve the problem. I believe that mindset is problematic.

Why?

Because it underestimates our own capacity to act. I have often heard people say: The board has to act. Politicians have to act. The boss has to act. My response is always the same: And what if they do not? What can you do yourself?

That sounds like a plea for greater self-efficacy.

I believe many people still do not fully understand how much influence they can have once they simply begin. You do not have to wait for someone else to clear the path. You can start walking. Perhaps an era is ending in which we assumed that someone else was always responsible for solving the problem. And perhaps a new era is beginning – one in which we rediscover what we ourselves can contribute. Everyone can take responsibility. Everyone can take the first step. And more often than not, that is exactly where change begins. ■

“I believe many people still do not fully understand how much influence they can have once they simply begin.”

Anke Sax

“Democracies Need New Architectures of Control”

Democracies must become faster while continuing to legitimize their decisions. Andreas Georg Scherer and David Sieber-Mengel explain what future-ready democratic governance looks like.

Andreas Georg Scherer, David Sieber-Mengel, is liberal democracy institutionally prepared for the speed of modern crises, or are we witnessing a structural overload of democratic systems?

We would frame the question somewhat differently. Crises themselves have not necessarily become “faster.” Many of today’s challenges have been known for a long time. What has fundamentally changed is the speed at which new threats emerge and responses must be developed, including in the field of defense. Developments in drone technology, AI-enabled weapons systems, cyberattacks, and corresponding defense capabilities can now occur within days or weeks rather than months or years.

In addition, Europe has spent decades living off the peace dividend. Material capabilities such as ammunition production were outsourced, capacities for territorial defense eroded, and military thinking largely disappeared from the political mainstream. All of this must now be rebuilt, and the associated learning processes must be accelerated. Even so, we do not observe a structural overload.

Democratic systems were deliberately designed not for speed, but for the quality of deliberation – as protection against arbitrary decisions and abuses of power. Lengthy public debates are not a defect. The real question is how democratic quality can be preserved where speed is essential. We do not



INTERVIEW **Andreas Georg Scherer, David Sieber-Mengel**

Prof. Dr. Andreas Georg Scherer is Professor of Business Administration and Organization Theory at the University of Zurich. His research focuses on corporate social responsibility (CSR), democratic governance, political CSR, and the role of corporations in society. He has published extensively in leading journals in management and organization studies.

David Sieber-Mengel is a research assistant and doctoral candidate at the Chair of Business Administration and Organization Theory at the University of Zurich. His doctoral research examines war as a business environment. He has conducted qualitative research on companies that continued operating in Ukraine following Russia’s full-scale invasion.

need to abandon existing institutions.

We need to extend them intelligently.

How does the rise of private technology companies such as SpaceX or Palantir change the traditional understanding of democratic oversight and state sovereignty? How can “technofeudalist” or “techno-fascist” concentrations of power be prevented?

Private companies have long played an ambivalent role in national defense.

U.S. President Eisenhower – himself a former wartime general – recognized this early on and warned in his 1961 farewell address about the dangerous influence of a growing military-industrial complex. Today, however, the profile of power has evolved further.

Earlier strategic technologies – fighter aircraft, tanks, missile systems, and warships – were developed by large corporations with vast production capacities and substantial government funding. Today, as the example of Palantir demonstrates, software expertise, a handful of laptops, and server infrastructure can be sufficient to develop security technologies that are highly relevant to defense.

At the same time, the growing role of private investment enables individual entrepreneurs outside traditional state-controlled defense networks to make decisions about strategically important resources. In the case of the Starlink communications system, it appears that a single individual can effectively determine whether the service is available to Ukrainian units. At the same time, the war in Ukraine shows how startups operating from sometimes improvised workshops continue to refine the drones that have fundamentally transformed modern warfare.

Regulating such technology companies through traditional governance models is increasingly difficult. Government agencies often lack the expertise required to understand, let alone effectively oversee, software-intensive technologies. In addition, the most influential companies are typically multinational corporations that can often evade purely national regulatory interventions. A broader form of regulation that relies on democratic processes – for example parliamentary debate – risks slowing decision-making precisely where speed is essential. Public oversight through civil society might be possible through open-source approaches, but that would also mean sacrificing strategic advantages. Democracies therefore need new architectures of control beyond traditional democratic and bureaucratic processes.

How can deliberative democracy remain capable of action under conditions of war, artificial intelligence, and hybrid threats? Does the current geopolitical turning point favor authoritarian models?

We see no empirical evidence that the current geopolitical shift inherently favors authoritarian models. This assumption is based on the intuition that authoritarian systems are better able to act quickly and exercise control. There is some truth to this. Authoritarian regimes can, for example, mobilize resources more rapidly, direct economies toward wartime production, and scale relatively simple technologies more quickly. Russia, for instance, produces drones in considerable quantities. Yet after more than four years, Russia has still not won the war. Alongside international alliances and public support, one factor appears particularly important for Ukraine's

KEY MESSAGES

- **Democracies** are designed for quality and accountability rather than maximum speed.
- **AI, drones, and cyber technologies** are dramatically shortening innovation cycles and require new forms of state capacity.
- **Technology companies** are gaining influence over security policy in ways that traditional regulatory models struggle to address.
- **Ukraine** demonstrates the strategic power of agile networks connecting government, business, the military, and civil society.
- **Europe** needs governance models that combine speed, resilience, and democratic legitimacy.

resilience: technological capabilities such as AI-supported situational awareness and sophisticated systems integration. These technologies emerge from democratic societies – specifically from pluralistic innovation ecosystems that connect entrepreneurs, experts, military professionals, and universities. In these areas, Russia appears to have invested more in propaganda than in building actual capabilities. Ukraine, by contrast, demonstrates military entrepreneurship in real time. Nevertheless, democracies can be slow when they rely exclusively on elections, governments, bureaucracies, and parliaments to respond to crises.

This is where deliberative democratic theory becomes relevant. According to this perspective, democratic qualities such as transparency, inclusiveness, and openness to argument are not necessarily tied to parliamentary procedures alone. They encompass public discourse as a whole. Digital platforms, citizens' assemblies, and structured deliberative formats can generate democratic legitimacy beyond parliament and even under conditions of significant time pressure. However, such mechanisms must be practiced and cultivated within society long before a crisis emerges.

What lessons can be drawn from Ukraine's defense organization for new forms of hybrid governance involving the state, business, and civil society?

The Ukrainian model is remarkable because it emerged under extreme pressure and nevertheless functions effectively. Particularly in air defense, Ukraine has succeeded in creating an agile ecosystem in which state institutions, private companies, NGOs, civilians, and individual soldiers work to-

“The Ukrainian model is remarkable because it emerged under extreme pressure and nevertheless functions effectively.”

Andreas Georg Scherer and David Sieber-Mengel

gether. Information from radar systems, acoustic sensors, AI-supported analysis, smartphone photographs, and many other data points is collected and integrated into a form that is operationally useful for soldiers.

This requires the systematic integration of bottom-up initiatives with top-down structures. When frontline units test new drone technologies and developers can respond directly, a level of responsiveness emerges that no traditional procurement system can match. In addition, experimentation must be institutionally enabled.

In Ukraine, new digital procurement platforms such as Brave1 and DOT-Chain Defense demonstrate how military procurement can function as an iterative process – with direct feedback from the field, digital transparency, and performance-based incentives. Experience and practical knowledge must also circulate rapidly. What works at the front must be capable of scaling quickly. This agile ecosystem, however, also has its pitfalls.

Direct, decentralized, and immediate data and procurement channels can create a lack of transparency that enables abuse, as procurement-related corruption scandals in Ukraine have demonstrated. The contrast with NATO illustrates the difference vividly. Pro-

curement processes that take years, strict compliance requirements, and multiple layers of parliamentary review can become dysfunctional in times of crisis. This does not mean abandoning democratic oversight. It means deliberately breaking through bureaucratic path dependencies.

What might a future democratic governance model look like – one that is simultaneously fast, resilient, and legitimate?

A future-ready democratic governance model must be capable of delivering solutions quickly and effectively during crises. At the same time, it must legitimize those solutions by ensuring transparency and accountability. Only then can it maintain public trust and acceptance – especially when restrictions become necessary.

Promising approaches to resolving this tension can be found in research on deliberative democracy. This field explores and tests ways of generating democratic legitimacy beyond elections and parliamentary debate. Some deliberative formats developed in this research may be transferable to the defense sector.

For example, a multi-stakeholder council for cyber defense could bring together representatives from government, technology companies, and civil society experts, with a mandate to develop >

common protocols and standards. Such arrangements are not intended to replace traditional democratic processes but to complement them. Beyond that, even within traditional democratic structures, decision-making speed could be decoupled from democratic quality. Parliaments could define frameworks in advance within which executive authorities are permitted to act rapidly, combined with guaranteed ex-post oversight. Democratic legitimacy does not always have to occur in real time. But it must be guaranteed. And where security concerns prevent transparency, reliable mechanisms of delayed disclosure are required. Accountability does not necessarily have to be immediate – but it must be unavoidable. That is how trust in confidentiality can be maintained. We would stress, however, that these are theoretical proposals, not blueprints. Empirically, we still know too little about which institutional designs are effective in prolonged crisis environments such as wartime conditions. What we do know is this: Europe must begin developing and testing these structures now – not only when a country is already involved in an active conflict. That is one of the central lessons from the Ukrainian experience. ■

“Democratic legitimacy does not always have to occur in real time.”

Andreas Georg Scherer and David Sieber-Mengel

*“We Are Not
Machines”*

Chess is a laboratory of decision-making. Germany's top chess player, Vincent Keymer, on strategic thinking, human intuition in the age of AI, and why even world-class players can never be perfect.

Vincent Keymer, congratulations on your success in Bucharest. How did you experience the past few weeks with the tournaments in Bucharest and Norway?

Vincent Keymer: Overall, very positively. Bucharest and Norway Chess were my first tournaments at this level with classical time controls. Naturally, a great deal of preparation went into them. At the same time, I noticed that playing two such tournaments back-to-back is demanding. By the time Norway Chess began, I already had a little less energy than before. That was particularly noticeable during time-pressure situations. Still, I am very happy with Bucharest. Of course, there are always things I can improve. But winning a Grand Chess Tour event on my debut was something very special.

How do you prepare for a tournament?

For classical tournaments, a large part of the preparation consists of opening work. This is not necessarily tailored to individual opponents. At the highest level, almost every player can play almost anything. The goal is rather to build as solid a foundation as possible so that I can spend less energy on preparation during the tournament itself. There are also tactical exercises. They help sharpen calculation skills. Especially after longer breaks from competition, it sometimes takes a while to get back into rhythm. Equally important, however, is arriving well rested. If you completely exhaust yourself in the weeks beforehand, you

begin the tournament at a disadvantage. Our tournaments often last nearly two weeks, and individual games can run for four to six hours. That is physically and mentally very demanding.

How did your chess career begin?

Actually, quite simply. I saw a chessboard somewhere and asked my parents what it was. It was pure curiosity. Back then, online opportunities were nothing like they are today. I watched DVDs featuring famous games, joined a chess club in a neighboring village, and played my first youth tournaments. Success came relatively quickly. At the age of six, I won an under-eight championship and qualified for my first German Youth Championship in the under-ten category. That is also how I met my first coaches, who helped me develop further. I do not come from a chess family, and nothing about my career was predetermined. It started as a hobby and evolved because the results came very early.

You come from a family of musicians. Did music influence your development as a chess player?

I played the piano quite intensively until I was around twelve or thirteen years old. At the time, I felt that the two disciplines influenced each other. Nevertheless, chess is ultimately something distinct. There are similarities between the two, but comparisons can only go so far.

What goes through the mind of a top chess player when looking at a position? What do you notice first?

INTERVIEW_ Vincent Keymer

Vincent Keymer, born in Mainz in 2004, became Germany's youngest chess grandmaster ever at the age of fourteen. Since 2021, he has been Germany's highest-rated player. After completing high school in 2022, he became a professional chess player and only months later sensationally finished as runner-up in the World Rapid Chess Championship. Following several tournament victories, he entered the world's top ten for the first time in 2025. In 2026, he won both the Grenke Open and the Super Chess Classic Romania in Bucharest. Vincent Keymer lives in Vienna.

KEY MESSAGES

- **Elite chess** is less about spectacular moves than about the ability to convert small advantages consistently.
- **Experience and intuition** help identify the options that truly matter.
- **Persisting with a plan** after reality has disproved it is often a greater mistake than the original error itself.
- **Chess develops skills** that are valuable far beyond the game itself.

That depends very much on the position. If I recognize a familiar structure, I usually have an idea of which plan makes sense. The crucial part, however, is the concrete execution. Knowing the right plan is not enough. You also have to implement it in the correct sequence in order to prevent your opponent's counterplay.

In other positions, things are relatively chaotic. Then there is no fixed plan, and you first have to determine in which direction the game should develop. Over the years, you develop a feel for chess. That intuition helps you focus on the most important possibilities, because there are always more possibilities than you can actually calculate.

How important is this intuition that comes from experience?

Very important. Many things happen automatically. Through years of training, you often recognize weaknesses, dangers, and critical points almost instantly. These are processes I no longer need to think about consciously.

Many people imagine top-level chess as a constant process of calculation. Is that a misconception? Is the strength of elite players not precisely that they need to consider fewer possibilities because of their experience?

That is difficult to say. We still have many possibilities that need to be con-

sidered. But we spend less time on poor alternatives because we have a better feeling for which variations are actually relevant. Of course, intuition can also be wrong. Then you have to search for concrete solutions.

So I do not think we calculate less. It is more that we are not machines and cannot calculate everything like a computer. That is why we have to focus on specific things. Often, it is not even about calculating extremely deeply. In fact, that is relatively rare. What matters more is calculating the first moves of a variation accurately and evaluating the resulting positions correctly. In the end, you have analyzed several candidate moves and must decide which one offers the best prospects.

How important is it to understand your opponent's intentions?

That depends greatly on both the position and the player. Of course, you constantly ask yourself: What is my opponent actually trying to achieve? Chess is not played alone. It is played against someone. The art lies in finding the right balance between pursuing your own plans and preventing your opponent's ideas.

Some people describe your playing style as controlled and safety-oriented. Do you see yourself that way?

It is difficult to say. Perhaps that was

true earlier in my career. I learned a great deal about how pieces work together harmoniously and how strength can emerge from defensive positions. However, during the years in which I played a great deal of online chess with shorter time controls, I became much more aggressive. My repertoire changed as well.

The stronger you become, the more you need to combine different elements. That is why I would not describe myself as a defensive player today. In Bucharest, for example, there were twelve decisive games in the entire tournament. I played four of them myself. My games are often highly combative and complex.

Do plans change during the course of a game?

Yes. One reason is that I can make mistakes myself. Not everything I considered correct ten moves ago still appears correct ten moves later. The other reason is, of course, that you react to your opponent. At a high level, both players often think about similar – or even identical – moves. Even so, surprises happen all the time. Otherwise, chess would be rather boring. Even when two top players calculate the same variation, they may evaluate it differently. And sometimes someone overlooks a move or assesses a

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„The art lies in finding the right balance between pursuing your own plans and preventing your opponent's ideas.“

Vincent Keymer

position differently than expected.

When that happens, not only does the position itself change, but often its entire character – and with it, the plans as well.

Where do you draw the line between strategy and tactics?

For me, tactics primarily means calculating forcing variations. In other words, concrete sequences of moves whose consequences can be predicted with a relatively high degree of precision. Then there is the dynamic nature of a position.

That is harder to define. You may see, for example, that one side has attacking potential because its pieces are active or because the opposing king appears vulnerable. Those factors belong more to the strategic sphere. Tactics itself remains the calculation of variations.

Many people associate tactics with sacrifices or winning material. Does that also apply at the highest level of chess?

In principle, yes. Those motifs still exist, of course. At our level, the variations are usually more complex and less obvious than in textbooks. But they are still part of tactics.

Are there situations in chess where doing nothing is actually the best option?

Yes, absolutely. The best-known example is zugzwang. The position would actually be perfectly fine, but you are forced to make a move – and that very move worsens your position. There is even mutual zugzwang. In such situations, both players would essentially prefer not to move at all. There are also positions in which active play is hardly possible. Then you wait, defend, and react to your opponent. So-called fortresses belong to this category as well: positions that cannot be broken through despite a material advantage.

Many people associate chess with a single spectacular combination that decides the game. What is it really like at the top level? Is victory determined more by moments of brilliance or by the ability to accumulate small advantages and induce mistakes?

I would say that at the highest level it is almost always about small advantages. The chances of an opponent making a major mistake are very low. That is why you try to build pressure over a long period of time and gradually increase it. The goal is to provoke small inaccuracies. If you exploit them consistently, they can eventually develop into a winning position. The details are often decisive.

So the legendary sacrificial combinations of a Mikhail Tal have become rather rare?

They still happen, but very rarely. Most games today are not decided that way.

How do you know when a plan is not working?

You have to be willing to revise your own opinion. Naturally, I want to defend my ideas, because I have invested thought in them. But sometimes it is more important to remain objective and find the best move – even if that means admitting that an earlier decision was wrong. I found that more difficult when I was younger than I do today. Often, the original mistake is not the real problem. The bigger mistake would be clinging to it.

How important is patience in elite chess?

Patience was never really a problem for me. Long games are simply part of the profession. I do not necessarily experience them as a test of patience.

What about the impatience to finally land the decisive blow?

That definitely exists. In chess, people often talk about “winning a winning position.” That sounds easier than it

actually is. When you feel that the decisive moment should arrive now, a certain amount of mental pressure emerges. Then you have to decide whether to force the issue immediately or continue improving the position and trust your long-term advantage.

Today, I try to approach such situations as concretely as possible rather than according to some overarching concept. I simply ask myself: What is the best move right now? I try not to tie that question to a preconceived plan.

You have now played Magnus Carlsen many times and have already beaten him on several occasions. What distinguished the games you won from those you lost?

That is not an easy question to answer. It was a combination of factors. In some cases, I played very well. In others, Magnus made mistakes. In one of the games I managed to win, he made a mistake that was actually quite uncharacteristic for him. The position had been more or less equal, and then suddenly there was that one move. That was the exception, though.

The best players in the world make mistakes like that only very rarely. What I find more interesting are the games in which an advantage builds up gradually over time. The match I won against Magnus was played in Freestyle Chess. There, the opening phase played a major role.

I was able to put him under pressure very early and, for much of the game, felt that I was on the better side of the position. That is often decisive at this level. If you can maintain pressure over a long period, the probability increases that a mistake will eventually occur.

How does a game against a human differ from a game against an engine for a top player?

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In reality, we do not play against engines. That essentially no longer happens because we would simply have no chance. The Elo ratings illustrate the point. The best players in the world are roughly between 2750 and 2800 Elo. The strongest engines operate at something like 3800 Elo. That is an enormous gap – almost comparable to the difference between a world-class player and an amateur.

That is why there is little point in playing against an engine. There are occasional experiments in which humans begin with material odds, for example an extra piece. That can be interesting. Under normal conditions, however, the game is practically unwinnable.

So engines are used primarily as training tools?

Exactly. They are used for analysis.

How much has working with engines changed your understanding of chess?

That is an interesting question because engines play with such precision that they almost contradict the traditional notion of “understanding.” Even so, you can learn a tremendous amount from them. When I analyze a position and see which moves the engine prefers, I compare that with my own evaluation. Then I ask myself: Why do I like an idea that the engine rejects? Why does it evaluate the position differently from the way I do?

Is it worthwhile to study games played between engines?

Yes, absolutely. Of course, analyzing such games is not always easy because the quality is often extraordinarily high. In a sense, you are looking at almost perfect games. Precisely for that reason, however, they can be very instructive. Particularly in the opening, engine games frequently provide new ideas and interesting concepts. The engines also calculate at tremendous depth in such competitions. As a result, the variations are exceptionally precise. You cannot simply copy what they do. But you can gain many insights and discover possibilities that might never have occurred to you otherwise.

In Go, a famous move by AlphaGo once attracted enormous attention because humans initially could not understand why it was so strong. Do similar moments occur in chess?

Not in quite the same way. In chess, it is usually possible to understand fairly precisely whether a move is good or bad and what consequences it has. The question is more how complex the explanation becomes. But in principle, the underlying logic can usually be understood.

Now that engines play stronger chess than any human, is there still such a thing as a genuinely human chess strategy?

I believe there is. Humans and engines often evaluate positions in very different ways. Humans rely on intuition and experience. Over the years, we develop a feeling for which types of positions are comfortable or uncomfortable to play. Engines, by contrast, evaluate positions very concretely and purely according to objective criteria. A good example is a drawn position. For an engine, a position is simply equal. Whether a human must find fifty precise moves to hold the draw or can play almost any reasonable move makes no difference to the evaluation. For a human, however, it makes a huge difference. That is why positions an engine considers completely harmless can be extremely unpleasant in practice. Conversely, humans sometimes see opportunities where an engine objectively sees none. Another difference is that humans often think in long-term concepts. We consider where pieces should ideally be placed, which maneuvers make sense, and how a position may evolve over time. An engine does not think in those terms. It simply searches for the objectively best move.

Today there are different forms of chess, from classical games to blitz and Freestyle Chess. Which format do you enjoy most?

That is difficult to answer. My primary >

„Human players and engines often evaluate positions in very different ways.”

Vincent Keymer

training is still focused on classical chess. At the same time, I am very happy that Freestyle Chess has gained prominence in recent years. I always enjoyed that format. It removes some of the pressure before a game because you do not have to prepare specific opening variations. It also has a highly combative character, and I believe that is important for chess.

What role do emotions play during a game?

They definitely play a role. At the same time, it is extremely important to maintain focus. If I realize that I have a better position, I cannot allow myself to become euphoric and lose precision. Likewise, after making a mistake, I should not spend too much time dwelling on it. Both reactions distract from the actual task. During the game, I therefore try to concentrate exclusively on the chess itself. The emotional processing comes afterward.

Does it make an emotional difference to play against Magnus Carlsen?

Certainly more in the past than today. By now I have played against him many times and have beaten him on several occasions. That naturally changes the psychological situation. In general, though, the opponent always matters. Against weaker players, I often enter the game with the feeling that I am expected to win. That influences decision-making. I become more willing to take risks and more inclined to choose complicated paths. Depending on whom you are playing, the dynamics of a game can therefore change quite significantly.

Can chess teach us something about decision-making beyond the game itself?

I think so. One of the most important skills chess develops is the ability to make good decisions under pressure. In

chess, you constantly encounter situations involving uncertainty, time pressure, or high expectations. You have to learn how to remain focused and make the most rational decisions possible despite those circumstances. Thinking ahead is, of course, another important aspect.

Chess trains the ability to evaluate different developments and consider their consequences. And then there is patience.

Although I have to admit that outside chess I am not necessarily as patient as I am at the board. For me, that depends greatly on how interested I am in a subject. If something genuinely fascinates me, I can be very patient. In chess, that is almost always the case.

Can chess help children and young people learn concentration?

I am convinced it can. Especially for children, it can be valuable to become accustomed to working on a single task with sustained concentration over a longer period of time. That is beneficial regardless of how strong they eventually become as chess players.

In your view, what makes someone capable of making good decisions?

It is difficult to reduce it to a single factor. In chess, good decisions require many different abilities simultaneously: calculation, positional understanding, intuition, and experience. Ultimately, every decision brings together everything you have learned over the years. Each position demands a complete package of skills. That is why it is difficult to isolate individual factors. Good decisions emerge from the interaction of many different elements.

If you were to play against your twelve-year-old self today, what would be the biggest difference?

There would probably be many differences. Over the past years, I have learned, trained, and experienced an enormous amount. In a certain sense, I am the sum of my knowledge and experience as a chess player. Naturally, I have developed not only in chess but also mentally. When you are young, it is often harder to deal with defeats or to maintain the right balance after success. But as with chess in general, it is difficult to reduce improvement to a single area. Progress usually comes as part of an overall package.

Earlier you mentioned that you are patient mainly with things that genuinely interest you. What fascinates you outside chess?

That depends somewhat on the situation. I am interested in football, although not in every aspect of it. When certain teams or major events are involved, I enjoy following it. A bigger passion in recent years has been road cycling. I have become deeply interested in it. When I bought a new road bike, I started learning about the individual components, replacing parts, and teaching myself how everything worked. So there are definitely interests beyond chess. The challenge is simply that there is not always much time for them.

Competition plays a major role in professional life. Can you be friends with your competitors?

I have a good relationship with most of the players I compete against regularly. At the same time, I would not necessarily describe those relationships as close friendships. There is a certain natural distance when you are constantly competing against one another. That makes it harder to be completely open. That is why it is important for me to have areas of life outside chess. My personal life does not consist solely of chess. >

What misconception about elite chess do you encounter most often?

What people often underestimate is the strain of tournament play. Most people only see the games themselves. What is less visible from the outside is the question of how much one can actually play before performance begins to suffer. Today there are an incredible number of interesting tournaments. That is why you have to think very carefully about which events to play and how to manage your energy. At some point, it simply becomes too much. Additional motivation no longer helps. Planning the tournament calendar properly is an important part of the profession.

Would you ever stop playing if you felt you could no longer improve?

I honestly do not know. Many former elite players remain connected to chess well into old age. I can understand that because chess shapes your life over many years. At the same time, I do not want to make definitive statements about the future. If the day comes when I want to do something different, that would be perfectly fine as well. At the moment, however, I do not think about that much. ■

„One of the most important skills chess develops is the ability to make good decisions under pressure.“

Vincent Keymer

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Contributors

Anke Allenhöfer, Claudia Alsdorf, Jonas Andrulis, Sven Biscop, Timo Blenk, Stefan Bratzel, Markus K. Brunnermeier, Mitra Bücke-Jahromi, Alex Capri, Raluca Csernaton, Florian Dalwigk, Elisabeth Essbaumer, Edward Fishman, Sir Lawrence Freedman, François Godement, Jan Goetz, Beatrice Heuser, Christian Hummert, Lars Immerthal, Vincent Keymer, Daniel Marwecki, Romina Medici, Pero Mičić, Branko Milanović, Armin Müller, Anja Opitz, Celia Pelaz, Christina Popa, Birger P. Priddat, Irina Rosensaft, Marina Rudyak, Eric Sangar, Anke Sax, Nadia Schadlow, Christina Schäfer, Andreas Georg Scherer, David Sieber-Mengel, Raymond Sun, Tim Sweijls, Élie Tenenbaum, Nathalie Tocci, Sylvia Trage, Thomas Vašek, Marcus Willett, Guntram Wolff

Artdirector & Graphic

Tanja Maus (fr.)

Picture Editor

Maja Metz (fr.)

Graphic

Christian Talla (fr.)

Editorial Contact

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Contributors & Interviewees

Dr. Anke Allenhöfer is Catem que pediatria pos as volo voluptatur? Dam que simet perum quaepe officii tet explabore ent face- sectem quiatinctus quiam iusandent, eaque nonet latest, sape volorepta volupti onse- quo dolorep eriaspis antiur.

Claudia Alsdorf is Head of Business Development at Schwarz Digits, the IT and digital division of the Schwarz Group. She is one of the pioneers of the German market for 3D and virtual reality applications and founded one of Germany's first companies in this field. In addition to her entrepreneurial activities, she has worked for many years with leading corporations and consulting firms such as SAP, KPMG, and Microsoft, focusing on the public sector, education, healthcare, and HealthCare & Life Sciences.

Jonas Andrulis is an entrepreneur and AI researcher with nearly two decades of experience at the forefront of artificial intelligence. His career includes senior roles at Apple and the founding of several technology startups, including Aleph Alpha. In early 2026, he founded CNTR, a Frankfurt-based collaborative AI company, in partnership with Roland Berger.

Prof. Dr. Sven Biscop is the acting director-general of the Egmont – Royal Institute of International Relations in Brussels, and a professor at Ghent University. He is a member of the Royal Academy of Overseas Sciences of Belgium, and an honorary fellow of the European Security and Defence College. He is the author of *This is not a New World Order* (2024) and *Grand Strategy in 10 Words* (2021).

Dr. Timo Gerrit Blenk is Senior Partner and CEO of Agora Strategy Group AG, the geopolitical strategy consultancy that emerged from the Munich Security Conference. A specialist in geopolitics, he advises industrial companies on global trends, market entry strategies, and the optimization of procurement and production architectures.

Prof. Dr. Stefan Bratzel is founder and director of the independent research institute Center of Automotive Management (CAM) at FHDW in Bergisch Gladbach. An automotive economist, he specializes in the future of mobility, innovation trends in the automotive industry, and the role of major technology companies. Following positions at smart, Group3G, and PTV, he has become one of Germany's most respected and frequently cited experts on the automotive sector.

Prof. Dr. Markus K. Brunnermeier is the Edwards S. Sanford Professor of Economics at Princeton University and Director of the Bendheim Center for Finance. His research focuses on resilience, international financial markets, macroeconomics, financial and monetary stability, and digital money. In 2020, he launched the webinar series Markus' Academy. The second edition of his book "The Resilient Society" will be published on 18 August 2026.

Mitra Bücke-Jahromi is a Senior Foreign Policy Advisor at the European Parliament. Her areas of expertise include Afghanistan, Iran, transnational repression, and democratic resilience. She studied Central Asian Studies at Humboldt University of Berlin and International Affairs at King's College London. She also serves as Vice Chair of Women in International Security Germany (WIIS.de).

Alex Capri is an expert on geoeconomics, technology competition and global supply chains. The author of the bestselling book "Techno-Nationalism", he teaches at the National University of Singapore and advises governments and multinational companies on issues such as tech diplomacy, semiconductors, AI, reshoring and economic decoupling. Before entering academia, he held senior roles at KPMG and served in U.S. trade and customs agencies.

Dr. Raluca Csernaton is a Fellow at Carnegie Europe in Brussels, specializing in European security and defence policy with a focus on emerging and disruptive technologies, particularly AI. She leads and contributes to several EU-funded projects on cyber diplomacy and digital technologies, teaches in Brussels as well as in Antwerp, and serves as Co-Lead of a research group on the governance of emerging technologies in Canada.

Florian Dalwigk is an expert in cybercrime, information security, and digital forensics. After studying computer science, he worked both within a critical infrastructure operator and at the German Federal Intelligence Service (BND). Since 2024, he has served as a volunteer lecturer for the modules Ethical Hacking, IT Forensics, Cyber Espionage, Cybercrime and Crypto Forensics, and Post-Quantum Cryptography. His book, "Cyberespionage" (Rheinwerk), is published July 2026.

Dr. Elisabeth Essbaumer is Senior Manager at Agora Strategy Group AG, Germany's leading geopolitical strategy consultancy, which originated from the Munich Security Conference. She advises international clients on geopolitical risk and cybersecurity. An >

economist by training, she previously conducted research at the University of St. Gallen (HSG) and co-founded a digital co-working platform.

Edward Fishman is Senior Fellow and Director of the Maurice R. Greenberg Center for Geoeconomics at the Council on Foreign Relations (CFR) in New York. As one of the leading experts on geoeconomics, Fishman brings together experience from government, the technology sector, media, and academia. His New York Times bestseller „Chokepoints: American Power in the Age of Economic Warfare“ was named one of the best books of 2025 by The Economist, the Financial Times, and Bloomberg.

Prof. Sir Lawrence Freedman is Emeritus Professor of War Studies at King's College London, where he taught from 1982 to 2014 and served as Vice Principal from 2003 to 2013. Books: *Command: The Politics of Military Operations From Korea to Ukraine* and *The Future of War: A History and Strategy*. A History (2013), among other works. Together with Sam Freedman, he publishes the Substack Comment is Freed.

François Godement is Senior Fellow and Special Adviser at the French think tank Institut Montaigne. Previously, he directed the Asia and China Programme at the European Council on Foreign Relations (ECFR) and served as an adviser to the French Ministry for Europe and Foreign Affairs. A leading China expert, he founded several of Europe's foremost Asia-focused research institutes and taught at INALCO and Sciences Po. His most recent books include *Les mots de Xi Jinping* (2021) and *La Chine à nos portes* (2018).

Dr. Jan Goetz is CEO and co-founder of IQM Quantum Computers, a company spun out of Aalto University and the VTT Technical Research Centre of Finland in 2018. Holding a doctorate in physics from the Technical University of Munich, he is regarded as one of the leading entrepreneurs in Europe's quantum-computing industry. He is leading IQM's expansion into an internationally leading provider of quantum computers and is actively involved in initiatives including the European Quantum Industry Consortium, where he also serves as an EIC Ambassador.

Prof. Dr. Beatrice Heuser is Distinguished Professor at the Brussels School of Governance (VUB) and Head of Strategy Teaching at the German Armed Forces Command and Staff College (Führungsakademie der Bundeswehr). Her research focuses on why humans wage wars, which means and strategies they choose, and how they justify them.

Prof. Dr. Christian Hummert is Research Director and Managing Director of the Agency for Innovation in Cybersecurity GmbH (Cyber Agency). A computer scientist and philosopher, he earned his doctorate from the University of Jena in 2014. He served as an IT forensics expert at the Thuringia State Criminal Police Office (LKA), was Professor of IT Security and Digital Forensics at Mittweida University of Applied Sciences, and headed the Digital Forensics division at ZITI-S. He is also an honorary professor in Mittweida and a lecturer at Ludwig Maximilian University (LMU) Munich.

Dr. Lars Immerthal is a strategy advisor and philosopher by training. For more than twenty years, he has supported companies facing complex decisions at the intersection of strategy, organisation, and leadership.

Following senior positions in international consulting firms, including KPMG Germany, he now works with organisations of varying sizes and across multiple industries.

Vincent Keymer, born in Mainz in 2004, became Germany's youngest chess grandmaster ever at the age of fourteen. Since 2021, he has been Germany's highest-rated player. After completing high school in 2022, he became a professional chess player and only months later sensationally finished as runner-up in the World Rapid Chess Championship. Following several tournament victories, he entered the world's top ten for the first time in 2025. In 2026, he won both the Grenke Open and the Super Chess Classic Romania in Bucharest. Vincent Keymer lives in Vienna.

Prof. Dr. Stefan Kolev is Professor of Economics at the West Saxon University of Applied Sciences Zwickau and Academic Director of the Ludwig Erhard Forum for Economy and Society in Berlin. He is co-founder of the Network for Constitutional Economics and Social Philosophy (NOUS) in Freiburg and serves on the Advisory Council for Evidence-Based Economic Policy at the German Federal Ministry for Economic Affairs and Energy. His research focuses on the history of economic thought, ordoliberalism, institutional economics, and economic sociology.

Dr. Daniel Marwecki is a political scientist and teaches International Relations at the University of Hong Kong. In spring 2024, his book „Absolution? Israel und die Deutsche Staatsräson“ was published. It was followed in autumn 2025 by „Die Welt nach dem Westen“. He is a regular contributor to a variety of media outlets.



Romina Medici leads Digital Platforms & Data Strategy at ERGO Group AG (Munich Re). Over the past decade, she has built and scaled AI and data transformation programs across European enterprises, most recently as the executive responsible for data and AI across more than forty business units in seventeen countries at E.ON. She is currently developing a practical framework for organizations navigating the transition to hybrid human-agent workforces.

Dr. Pero Mičić is CEO and founder of Future-ManagementGroup AG. He works as an author, keynote speaker, and management consultant, and serves as Professor of Foresight and Strategy at Steinbeis University Berlin. He earned his doctorate from Leeds Business School in the United Kingdom in 2007 with a dissertation on the methodology of futures management.

Branko Milanović is a Serbian-American economist best known for his work on global income inequality and economic development. He spent two decades at the World Bank, including as Lead Economist in its research department, and is widely regarded as one of the most influential scholars of inequality today. His most recent book is *The Great Global Transformation* (2025).

Armin Müller is Regional Vice President Central Europe at Veeam. Prior to joining Veeam, Müller held senior leadership positions at Broadcom Software, VMware, and Oracle, and also worked for IBM and T-Systems. Throughout his career, he has been responsible for driving growth, cloud transformation, and enterprise strategy initiatives across Europe. Armin Müller holds an MBA from the internationally renowned Henley Business School and a degree in Business Administration (Diplom-Kaufmann).

Dr. Anja Opitz is a political scientist and an expert in geopolitical risk, resilience, and strategic decision-making. For more than twelve years, she has headed the Department of International Relations and Security Policy at the Academy for Civic Education. As former President of the Global Health Security Alliance, she combines perspectives from security, public health, and business. For the past twenty-five years, her work has focused on how geopolitical developments can be translated into concrete leadership decisions – before they affect supply chains, markets, or business models.

Celia Pelaz is currently Chief Operating Officer and a member of the Management Board of Spire Global, which operates a multifunctional satellite constellation with manufacturing facilities in Munich, the United Kingdom, and the United States. In 2021, Celia Pelaz was appointed Chief Strategy Officer and member of the Executive Board of Hensoldt AG. She subsequently served as Chief Operating Officer (COO) until August 2024. Effective 1 October 2026, she will become CEO Defence & New Space at Schaeffler and, in that capacity, assume leadership of the management board of STech Defence GmbH, the independent subsidiary of Schaeffler AG.

Cristina Popa is a business psychologist and entrepreneur with experience across industry, energy, technology, and the automotive sector. As a former partner in a renowned transformation consultancy, she was responsible for strategic programmes in digital transformation, organisational development, and leadership. Following roles including Interim CEO and Strategic Advisor to a technology start-up, she founded controlSHIFT and the corporate foundation SHIFTsociety in 2024.

Prof. Dr. em. Birger P. Priddat is Professor Emeritus of Economics and Philosophy at the University of Witten/Herdecke. Previously, he held the Chair of Political Economy at Zeppelin University. He is a Senior Research Fellow at the Witten/Lab of the Studium Fundamentale. His most recent publications include *Democracy Trumped?* (2026) and *The Market of Friendly Citizens in Wealthy Athens* (2025).

Irina Rosensaft heads the Programme Office of the National Once-Only Technical System (NOOTS) at FITKO (Federal IT Cooperation), an initiative designed to make public administration more efficient and citizen-friendly. With a background in political science and extensive experience in process optimization, change management, and cybersecurity, she builds bridges between technology, governance, and organizational as well as societal requirements.

Dr. Marina Rudyak is a sinologist at Heidelberg University, an author, and a policy adviser. Her research focuses on China's role in the world, its relations with the Global South and Russia, and the contest for international discursive power. She is also Co-Director of the Decoding China Project, which examines how key concepts of international relations are understood differently in China. Her most recent book is *„Dialog mit dem Drachen“* (Dialogue with the Dragon) (2025).

Dr. Eric Sangar is Assistant Professor of Political Science at Sciences Po Lille and a researcher at CERAPS (University of Lille). His research focuses on collective memory in foreign policy, emotions as justifications for political violence, and the forecasting of military threats. His most recent publication is *Germany's Grand Strategy* (2026). >

Dr. Anke Sax is an experienced executive specializing in the integration of IT strategy, cultural transformation, and modern technologies. Most recently, she served as Managing Director (COO/CTO) of the investment and asset management company KGAL. Holding a doctorate in business informatics, she has received numerous distinctions, including European Digital Leader 2020 and CIO of the Year 2019.

Dr. Nadia Schadlow is a senior fellow at the Hudson Institute. Previously, she served on the National Security Council (NSC) as Deputy National Security Adviser for Strategy, where – as the architect of the 2017 National Security Strategy – she coordinated strategic analyses and developed policy initiatives across multiple government departments at the most senior levels. While at the NSC, Nadia also advanced the concept of a National Security Innovation Base (NSIB) to assess the potential impact of disruptive technologies on U.S. national security policies.

Christina Schäfer is a Senior Consultant at Agora Strategy Group, where she supports companies in anticipating geopolitical risks and building resilience across supply chains and business models. Prior to joining the firm, she worked in risk advisory at PwC and at the German Federal Foreign Office. She completed her master's degree at Sciences Po Paris.

Prof. Dr. Andreas Georg Scherer is Professor of Business Administration and Organization Theory at the University of Zurich. His research focuses on corporate social responsibility (CSR), democratic governance, political CSR, and the role of corporations in society. He has published extensively in leading journals in management and organization studies.

David Sieber-Mengel is a research assistant and doctoral candidate at the Chair of Business Administration and Organization Theory at the University of Zurich. His doctoral research examines war as a business environment. He has conducted qualitative research on companies that continued operating in Ukraine following Russia's full-scale invasion.

Raymond Sun, a tech lawyer at Herbert Smith Freehills Kramer and developer from Sydney, Australia, best known for being the creator of the Global AI Regulation Tracker, which is an industry-leading interactive world map tracking AI laws and policies across 195+ countries with over 70,000 active users worldwide. As an active programmer, Raymond dived early into the world of legal engineering since 2018, having worked in technical roles at LawPath (building doc automation platform) and a secondment at IBM (building smart contract platform). He co-founder LegalQuants – a network of lawyers who build their own tech to practise law known as the 'legal quants'. Raymond is a Top Voice on AI on LinkedIn, and runs the Data Science and AI Association of Australia.

Dr. Tim Sweijts is Director of Research at the The Hague Centre for Strategic Studies (HCSS). His interdisciplinary work spans strategy, security, technology, and warfare. He has authored numerous studies and books on strategic foresight, deterrence, emerging technologies, international security, alliances, and defence planning, with a particular focus on strategy development for small and medium-sized powers.

Dr. Élie Tenenbaum is Director of the Center for Security Studies at the Institut français des relations internationales (Ifri) and is widely regarded as one of France's leading security experts. His research focuses on European security and defence policy as well as strategic questions relating to the international order. A trained historian, he studied at Sciences Po and was a visiting scholar at both Columbia University and King's College London. His most recent publication is *Mapping the MilTech War: Eight Lessons from Ukraine's Battlefield* (2026).

Nathalie Tocci is a political scientist and expert on European foreign and security policy. She teaches at Johns Hopkins University and Bocconi University. Nathalie Tocci previously served as Director of the Istituto Affari Internazionali (IAI) and as Special Adviser to EU High Representatives for Foreign Affairs Federica Mogherini and Josep Borrell. In that capacity, she was one of the principal authors of the European Global Strategy. Tocci's research focuses on Europe, geopolitics, security, climate, and international co-operation.

Dr. Sylvia Trage is Partner for CFO Advisory and an expert in Digital Factory and Supply Chain at the management and IT consultancy MHP. Over the past twenty years, she has developed extensive expertise in optimizing value chains and industrial networks, both at international consulting firms as well as at Siemens.

Thomas Vašek is Co-Editor-in-Chief of human. Previously, the trained investigative journalist was, among other roles, founding editor-in-chief of the philosophy magazine *Hohe Luft* and of the German edition of *MIT Technology Review*. He is also the author >

of several non-fiction books, including *Schein und Zeit* (2019), *Land der Lenker* (2019), and *Work-Life-Bullshit* (2013), a widely discussed contribution to the debate on the value of work in our lives.

Marcus Willett (CB, OBE) is a Senior Adviser at the International Institute for Strategic Studies (IISS). Prior to joining the IISS, he spent 33 years at the UK Government Communications Headquarters (GCHQ), most recently serving as Deputy Director with personal responsibility for intelligence collection and cyber operations. Earlier, he was GCHQ's first Cyber Director and led the UK National Offensive Cyber Programme. In 2024, he published *Cyber Operations and their Responsible Use*.

Prof. Dr. Guntram Wolff is Professor of Economics at the Université libre de Bruxelles (ULB) and a Senior Fellow at Bruegel, which he directed from 2013 to 2022. From 2022 to 2024, he served as Director of the German Council on Foreign Relations (DGAP). Throughout his career, he has published extensively in leading academic journals on European governance, geo- and defence economics, macroeconomics, and climate policy. He regularly advises the Council of EU Finance Ministers. ■

知彼知己，百戰不殆。

孫子 Sunzi

孫子兵法 Die Kunst des Krieges, Kapitel 3 (ca. 5. Jhd. v. Chr.)

Let tyrants fear. I have always so behaved myself that, under God, I have placed my chiefest strength and safeguard in the loyal hearts and good-will of my subjects; and therefore I am come amongst you, as you see, at this time, not for my recreation and disport, but being resolved, in the midst and heat of the battle, to live and die amongst you all...

Elizabeth I

Tilbury Speech (1588)

„Der erste, der oberste, der weitgreifendste Akt des Urteils, den Staatsmann und Feldherr üben, ist, daß sie die Art des Krieges, auf den sie sich einlassen, richtig erkennen; daß sie ihn weder für etwas halten, noch zu etwas machen, was er seiner Natur nach nicht sein kann.“

Carl von Clausewitz

Vom Kriege, Buch I, Kapitel 1 (1832)

“There is surely nothing quite so useless as doing with great efficiency what should not be done at all.”

Peter Drucker

Management: Tasks, Responsibilities, Practices (1973)

human *FORWARD*