



FROM FENCED YARDS TO SHARED GARDENS:

Quantum Technology, Sovereignty, and the Middle-Power Moment

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Inaugural Lecture · Niels Bohr Institute · 19 June 2026

Colleagues, friends, and family:

Let me begin by saying thank you. To Rector David Dreyer, to Joachim Mathiesen, Head of the Niels Bohr Institute, and to Professor Jan Thomsen: thank you for your trust and your courage.

The Niels Bohr Institute was built on a conviction: that the most consequential questions belong to no single nation, that science at the frontier requires an international community bound not by flag but by rigour, by curiosity, and by the willingness to be wrong in public. Bohr himself understood that. He spent a career crossing borders, between nations, between scientific disciplines, and between the laboratory and the corridors of power.

I want to begin there, with Bohr, because the questions I wish to address today are not so different in structure from the ones he faced. He asked how we could govern technologies of extraordinary creative and destructive power, and whether sovereign states could act collectively enough. He did not always find satisfying answers.

But he kept asking. And it is in that spirit, of disciplined uncertainty and principled inquiry, that I offer this lecture.

The subject is technological sovereignty—for middle powers, and specifically for quantum.

That opens onto great-power competition and competitiveness—and we will get there.

But the way we hold a subject in our minds determines what we are willing to do about it.

So before I go further, I want to step back and reframe the subject itself.

Consider what it means to compete. You can compete in two ways: to win, or not to lose. But you can only compete to win if you know what winning looks like—try playing chess to win without knowing what checkmate is.

For a generation, we believed we knew. Checkmate meant competitiveness: growth, productivity, market share, a respectable place in someone else's supply chain.

And so we asked the natural question:

how do we best invest in research and innovation to make ourselves more competitive? That is the question Mario Draghi set out to answer. **But the checkmate has changed.** In a world where technology decides not only who prospers but also who is secure and who remains free, this question is no longer valid. There is now an existential dimension that we need to acknowledge—and it is what changes everything.

So I want to replace it with a different one:

What if we were investing in quantum technologies as if our lives depended on it?

Not as if it would be just useful. Not as if it might, one day, be strategically interesting. Not as if it were a respectable line in a research budget.

But as if our lives (our security, our prosperity, and freedom) genuinely depended on it.

Hold that question. It changes what counts as ambition. It changes what counts as serious answers to the challenges we are faced with today.

Part of what makes that question so hard to ask is the language we have inherited.

We speak, almost without thinking, of *competitiveness*, of productivity, of market share.

But these are not innocent words. They carry a whole world inside them, of treating technology as one more sector to be managed for growth.

The danger is that the old vocabulary of competitiveness – the old vocabulary of how to compete-to-win - imprisons us in the very mindset we are trying to escape.

So, one of the most important things we should do now, is to speak differently.

Describe quantum technology in economic terms and we will treat it as an economic matter, funding and protecting it as we would any other promising industry: carefully, slowly, at the margin. Describe it in existential terms, as bearing on our security and our freedom rather than our growth figures, and we will act on a different scale.

So, today I want to speak of quantum technologies not as an opportunity to be seized but as a condition of our freedom to be secured.

And here is the paradox.

You might expect that abandoning the language of competitiveness means giving up on prosperity.

The opposite is true. It is precisely **by treating quantum technologies – and all the other critical technologies - as existential that we will end up more competitive, more productive, more prosperous.**

Aim directly at competitiveness and you get incrementalism: cautious budgets, safe bets, a fair share of a market someone else has defined - and to their rules of how to play on that market.

Aim instead at something where you have a right to win and you genuinely cannot afford to lose, and you unlock a different order of seriousness, a different level of ambition.

It is that seriousness which builds the industries, attracts the talent, and creates the productivity gains that the competitiveness agenda asks for but rarely delivers.

The Manhattan Project was not run as an economic-development programme, yet it seeded the postwar American technology economy.

Bell Labs was not chasing quarterly returns when it gave us the transistor and information theory.

And Ukraine's envied drone industry is the result of an existential threat - not industrial policy.

The existential framing is not the enemy of competitiveness and prosperity. It is its most reliable long-term source.

1. A Rupture, Not a Transition

Now, let me name the moment that gave this question, this existential framing, its current urgency.

Over the past year, a diagnosis has been forming across the capitals of the middle powers. Its sharpest expression came at Davos in January, when one middle-power leader - Canadian PM Mark Carney - described what **is happening to the world order as a rupture**.

The diagnosis of rupture describes a world in which great powers have begun using economic integration as weapons, tariffs as leverage, financial infrastructure as coercion, supply chains as vulnerabilities to be exploited.

And out of that diagnosis came a line that has been repeated ever since, because it captures the predicament so exactly:

"Middle powers must act together, because if we're not at the table, we're on the menu."

This argument has prompted considerable discussion across the Nordic countries, and rightly so. Because what it names is something that scholars and policymakers had been circling around for years, without quite finding the language: **the problem of the middle**.

Not too small to matter. Not large enough to dominate. Exposed enough to be coerced. Capable enough to be envied.

That is the condition of middle powers in the current technological order – also when it comes to quantum technologies. And it is the condition I wish to examine today, with some practical ambition.

2. What Sovereignty Actually Means

Now let me have a look at what Technological Sovereignty actually means, because this word is used so promiscuously that it has begun to lose its force.

Technological sovereignty is often invoked as a slogan. Sometimes it means national self-sufficiency. Sometimes it is shorthand for industrial ambition, a vague promise that a country will have a stake in the next wave of transformative technology. Both usages are inadequate, and in the hands of middle powers, both can become actively misleading.

A more precise definition is possible, and it has to start from what is actually at stake, which is freedom - the existential dimension - rather than market position. Here it is: ***Technological sovereignty is the durable capacity of a state, acting nationally or with trusted partners, to retain control over the development, production, and strategic use of technologies essential to its security, its prosperity, and its political freedom.***

Security, prosperity, and political freedom are not three items on a list of policy goods. They are the conditions under which a People remains the author of its own life.

When I speak of technological sovereignty, then, I am not describing an industrial preference. I am describing whether our communications stay our own, whether a society can be coerced through the dependencies it has let form around it.

To lose sovereignty in a critical technology is not to fall behind in a race. It is to hand someone else a quiet veto over your future.

With this definition, the meaning of sovereignty **shifts from ownership to control.**

It recognises that sovereignty is domain-specific: a state may need very high control over space launch, over encryption, over quantum-sensitive infrastructure, while remaining comfortable with market dependence in other sectors.

And it recognises something that I consider the central insight of this entire discussion: **sovereignty can be collective.**

Middle-Power countries can achieve a higher level of real control through trusted coalitions than through underpowered national programmes designed primarily for domestic political consumption.

This is not obvious. It cuts against the instinct of governments, which are rewarded for visible national achievements, rockets bearing national flags, domestic chip fabs, home-grown AI champions.

This idea deserves a name. What I am describing is a shift toward what we can call: 'collective statecraft'.

For a great power (US and China), statecraft can be the projection of national capability: its own market, its own military, its own laboratories, mobilised behind its own purposes.

For a middle-power this type of "nationalism" is a trap.

For states of our size, the unit of effective sovereign action is NOT the single country but the trusted coalition, and our task is to build the institutions through which such coalitions can decide, commit, and act.

3. The Limits of Fenced Yards

But let me be very clear this goes against the current approach called "high fences around small yards" - famously delivered as a new policy paradigm by former US National Security Advisor, Jake Sullivan.

It captures something important. In a world of dual-use innovation, military-civil fusion, and targeted intellectual-property theft, not every technology can remain open to all comers. Some capabilities must be protected. **But here is the problem. The metaphor was built for a different country.**

For the United States, a fenced yard can still be very large. It encompasses a vast domestic market, deep venture capital pools, extraordinary research universities, and is still the world's most capable defence ecosystem.

When Washington speaks of strategic autonomy, it speaks from a position of extraordinary underlying strength.

We do not have to imagine what it feels like to stand on the wrong side of that fence. We learned it this very week. Days ago, one of the most capable artificial-intelligence systems yet released to the public was withdrawn, almost overnight, from every person outside the United States by an emergency export-control order—and from every foreign national inside it, including the company's own employees. A capability open on a Monday was, by the end of the week, a domestic American asset, and the rest of us were simply outside the yard. This is the quiet veto made visible. No tariff, no treaty broken, no shot fired: a single administrative decision in one capital reached across our continent and switched a frontier technology off. That is what dependence on another country's fenced yard means in practice—your access to the future held at someone else's discretion.

And here the argument turns.

The answer to this is not a smaller, lonelier yard of one's own; no Middle-power, acting alone, will build a frontier model to rival the great powers.

The answer is what I will call a 'shared garden': a capability that a coalition of trusted partners builds, holds, and governs together.

If Denmark, or Sweden, or Canada simply copies the instinct of tighter control and national preference, the result is not strength. It is the protection of scarcity. It is dissipated capital (bad use of our tax payers money), restricted talent, and a proliferation of underpowered national efforts that individually fail to achieve scale and collectively fail to achieve coordination.

There is a paradox here: the more a middle-state tries to reproduce sovereignty across a vast technology landscape, the more it risks weakening the very capabilities it hopes to secure.

The Niels Bohr Institute understands that intuitively. The most important advances in quantum technologies were not achieved through national isolation, but through exactly the kind of open, high-trust collaboration that the current era is making harder to sustain. That difficulty is real. **But the answer is not to abandon the model and seek survival in national protectionism. It is to govern collaboration more intelligently.**

4. Why Middle Powers Must Think Collectively and Concretely

Let me now be more specific about these "Shared Gardens" and why they will be particular important for quantum technologies.

Middle powers possess complementarities that superpowers cannot easily replicate, and that are more powerful in combination than in isolation. The Netherlands anchors lithography; Denmark, world-class quantum science; Sweden, photonics and a sophisticated defence-industrial base; Canada, research systems, aerospace, and Arctic reach; Australia, critical minerals and Indo-Pacific geography; Japan and South Korea, advanced manufacturing and engineering depth.

Each has pieces of the puzzle.

And the question, the only question that really matters strategically, **is whether these countries can assemble coalitions that convert complementary strengths into forms of collective control.**

In some domains, that means pooling research infrastructure. In others, it means coordinating export controls, aligning investment screening, or building shared procurement platforms. In still others, and this is the argument I want to press most firmly today, **it will mean jointly financing and buying a capability before a market for it fully exists.**

This, I believe, is especially important for quantum technologies.

Demand is a strategic resource. Middle powers tend to think of themselves as rule-takers in markets shaped by larger economies, but in many of the critical technologies of the next decade they are substantial buyers. Aggregate that demand and they can help bring the capability they need into existence rather than waiting indefinitely for others to provide it on someone else's terms.

5. Collective Buying as Statecraft

Collective buying is more than a procurement reform. It is the most concrete instrument of the collective statecraft I described earlier, the point at which a shared strategic intention becomes a signed commitment. The idea is simple: **if several middle powers need a capability that markets are not yet providing at the necessary scale, speed, or security standard, they should jointly create the demand conditions that will bring it into existence.**

This logic draws directly from the Advanced Market Commitment literature, the same logic that accelerated vaccine development during the COVID pandemic – by the way the last time we were investing as if our lives depended on it.

When private firms face uncertainty about future demand, high fixed costs, and the risk that governments will change the rules after their investments are made, a credible commitment to buy can be transformative. It justifies investment in capacity that would otherwise look too risky, and it reassures firms that the market will exist once the technology is delivered.

Quantum technology is where this logic applies with the most force, and the most difficulty. It promises breakthroughs in computing, sensing, communications, and timing, but it remains uncertain which pathways will prevail and where commercial scale will first emerge.

That makes it a poor candidate for national self-sufficiency: the supply chains are too specialised, the science too globally distributed, the timelines too long. But for nearer-term applications (quantum sensing, secure timing, specialised communications) **a collective buying mechanism could accelerate capability formation and keep strategic value inside trusted networks, rather than allowing it to drift toward the largest or least restrictive market—the United States.**

Collective buying is how the existential framing becomes practical. It is the point at which a shared garden stops being a metaphor and becomes a purchase order.

6. Two Proposals

So let me therefore present two proposals capable of converting complementary strengths into durable shared capability.

The first is a **Nordic Quantum Buyers' Club paired with a Nordic DARPA**. A **Nordic Quantum Buyers Club (NQBC)** would begin with near-term, deployable applications: quantum sensing for undersea cable and pipeline monitoring, quantum timing for resilience in GPS-degraded environments, quantum-secured communications for critical government networks. Applications where a credible, multi-year purchase commitment from five Nordic governments could accelerate capability formation by years and anchor the resulting industrial base firmly inside a trusted regional network.

What is missing is not the institutional architecture. What is missing is the political decision to make a collective Nordic commitment credible, and the procurement machinery to make it contractual. **That decision could be made. It could be made this year.**

And the timing is right.

The Nordic momentum is no longer only governmental. This May, more than twenty-five of the region's largest companies and foundations—the Novo Nordisk Foundation among them—launched Nordic Compass, an industry alliance built on exactly the conviction I am defending: that for the Nordics, competitiveness and resilience are no longer merely economic matters but strategic, existential imperatives.

But a buyers' club, on its own, is only half an instrument. A commitment to buy a capability presupposes that the capability can be brought into existence, and demand with no research engine behind it is a procurement vehicle with nothing in the pipeline. So the buyers' club needs a twin: a supply-side engine that can identify and fund the breakthroughs the trusted coalition of willing middle-powers needs.

Call it a **Nordic DARPA**.

European leaders have called for a European DARPA for years, and the record so far teaches us something important: that a string of national and supranational attempts have struggled to reproduce its results—not for want of ambition, but because one ingredient was usually missing. The Nordic version can learn from that. The reason is now well understood. DARPA worked not only because of independent, empowered programme managers, but because it had an embedded buyer, the US military, that created an initial market for what it proved out.

That last feature is the one almost every clone has lacked. A research agency with no buyer at the end of the pipeline produces excellent prototypes that die in the valley between invention and industry, or are scaled up far from home, beyond the reach of any partner we trust.

This is precisely the gap the quantum buyers' club is designed to close. The two are halves of a single system. The DARPA model that worked in the United States was a research agency embedded in a procurement state. The model the Nordic DARPA needs is a research agency embedded in a coalition-based demand mechanism. And both, crucially, are built not by governments alone but as partnerships between governments and the private sector.

The second proposal concerns the foundation on which all of this ultimately rests: the capacity of universities like the University of Copenhagen to sustain the frontier research from which strategic capability ultimately flows.

The University of Copenhagen faces the pressure every European research institution faces: the gap between what public and private funding can provide and what frontier research and innovation requires is widening, not narrowing.

The answer, the only one structurally sufficient, is an **endowment fund for the University of Copenhagen**, modelled on the long-duration, professionally managed endowments that give Cambridge, Oxford, and MIT the autonomy to pursue research and innovation on timescales no annual budget can accommodate.

I am happy to announce that I, together with the Rector and stakeholders of the University, will explore how such an endowment fund for Copenhagen University could be set up - spanning governance, investment management, donors, and legal frameworks, drawing on both the Danish context and the Anglo-American endowment models.

An endowment like this matters beyond the University's balance sheet. It would do more than fund research and innovation; it would change Denmark's technological position, from passive recipient of external conditions to active, long-horizon investor in its own future. It would give the University the financial runway to build and retain the exceptional talent on which quantum leadership depends.

The Draghi report called for a doubling of the budget the European Research Council, the long-promised three per cent of GDP on R&D, and a European DARPA.

A Copenhagen University endowment fund would be the institutional complement to that architecture, the long-horizon capital that lets a single great university take the bets the framework programmes cannot, and most importantly a model for how European universities help secure technological sovereignty across the continent.

And here I return to the word I cautioned against at the outset. We are used to defending such investments in the language of competitiveness. But an endowment like this is not only about competing. It is first and foremost about whether our societies keep the capacity to think, to discover, and to defend themselves on their own terms.

And here, again, is the paradox: a university funded to secure that capacity, rather than to climb a ranking, is exactly the kind of university that ends up topping the rankings. Build it for existential reasons, and prosperity follows.

The two proposals differ in their instruments and their timescales, but they share one logic: both build the institutional infrastructure of a shared garden, one at the level of market-making, one at the level of knowledge creation. And both, in their different ways, are acts of technological sovereignty.

7. Conclusion: The Garden We Must Build

So to conclude, the great challenge of our moment is not technological but political. The technologies exist, or will. The knowledge exists, or can be generated. The question is whether

the institutions needed to deploy them, in the service of sovereignty, security, and shared prosperity, can be built in time, and whether the countries with the most to contribute will act with the urgency the moment demands. The age of open-ended globalisation is over, and so is the illusion that every relevant state can build sovereignty alone. The countries that matter most in the next phase will be those that understand how to turn interdependence into leverage, **moving deliberately, institutionally, irreversibly, from fenced yards to shared gardens**. Collective Statecraft!

That garden will not build itself. It requires the combination of scientific rigour, strategic clarity, and institutional patience that this Institute has always represented, and the willingness to think across borders while acting with discipline and purpose.

The window for building the institutions we need is open, and it will not stay open indefinitely. The choices made in the next three to five years will shape the technological order for a generation.

I asked: **What if we were investing in quantum technologies as if our lives depended on it?**

This opens up for a redefinition of Technological Sovereignty, a new understanding of the role of Middle-powers, and importantly the creation of “Shared Gardens” via collective Statecraft.

I suggest the creation of the Nordic Quantum Buyers’ Club, a Nordic DARPA, and an endowment fund for the University of Copenhagen.

They are attempts to build the kind of institutions - like the Niels Bohr Institute - with the courage to embrace the heretics, whose ideas do not yet fit any existing budget line, and to turn them, by the act of embracing them, into our heroes. They are existential and examples of how we should compete-to-win Together.

Thank you!