

# Accomplishments of shogi and go champions

## Editorial

Shogi champion Yoshiharu Habu this month became the first shogi player to hold all seven *eisei* lifetime titles of the game. Go champion Yuta Iyama in October succeeded in grabbing all seven major go titles simultaneously for the second time. Their great accomplishments come at a time when human players have become no match for rapidly progressing artificial intelligence in their respective board games. Their feats carry extra significance in that they have highlighted the fact that shogi and go matches are fascinating for their drama and excitement — two elements that computers cannot generate merely by winning games through algorithms.

In the fifth round for the 30th Ryuo title held in early December in Ibusuki, Kagoshima Prefecture, Habu beat title-holder Akira Watanabe in 87 moves. The 4-1 victory in their best-of-seven match enabled him to retake the prestigious title for the first time in 15 years. Since he has won the Ryuo title seven times, he gained the *eisei* lifetime Ryuo honor. This made him a holder of *eisei* honors for all seven major shogi titles — Ryuo, Meijin, Oi, Oza, Kio, Osho and Kisei.

It must be noted that, given the tough competition in the shogi world, to earn even a single lifetime honor is quite difficult. Each title has a rule for according an *eisei* honor to a player. Depending on titles, a player must win the title five or more times, either in total or consecutively. To obtain the Ryuo *eisei* honor, a player must win the Ryuo titles either five times back to back or seven time in total.

Habu's great accomplishment will add to the excitement in the shogi community along with the advent of 14-year-old prodigy Sota Fujii, who in June set an all-time record of 29 consecutive victories while being unbeaten since his professional debut in October 2016.

Habu himself turned pro in 1985 when he was only in the third year of junior high school. In 1989, when he

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was just 19, he became the youngest-ever shogi player to win a title when he clinched the Ryuo. In 1996, at the age of 25, he became the first player to dominate all seven major shogi titles. Now 47 — an age at which many past shogi champions were no longer able to win titles — Habu's latest accomplishment raises hope that he will continue to be a formidable player who defies the challenges of age.

Iyama in April 2016 became the first go player to simultaneously hold all seven major titles of the game by winning the 54th Judan title at the Nihon Ki-in (Japan Go Congress) in Tokyo with a 3-1 score against Atsushi Ida in a best-of-five match. Besides Judan, he became the holder of six other titles — Kisei, Meijin, Oza, Tengen, Gosei and Honinbo. Although he later lost the Meijin title, the 28-year-old player won it back in October, thus recapturing all seven titles at the same time.

These days, players from China and South Korea are exhibiting their strength in international go matches. But hopes are building that early next year Iyama will win the international tournament for the LG Cup, sponsored by the LG Group of South Korea, which would be the first such victory by a Japanese player in some time. In the semifinal held in November, he beat Ke Jie from China, who is touted as the world's top go player. Iyama is scheduled to face Xie Erhao from China in the final match in February.

This year, the growing performance of AI in the world of board games was conspicuous. In shogi, the PONANZA software routed Grandmaster Amahiko Sato 2-0 in April and May. In the go world, the AlphaGo program trounced China's Ke 3-0 in May. Since the power of AI appears to be overwhelming, the ability of human players to create drama that moves spectators during the games will be all the more important. Noting that the rapid progress of AI has put the *raison d'être* of human players in question, Habu stresses the importance of contestants making efforts to make their games interesting for the people who watch them. Iyama says the arrival of AI will not lower the value of games played by humans because spectators are moved by each judgment that players make under extreme conditions during matches, including their errors.

One aspect of AI's arrival on the shogi and go scenes is that players have started to hone their tactics and strategy by learning from new moves employed by AI programs. How to cope with the progress of AI is a major question posed to human society as a whole. People can gain courage and insight from how these shogi and go players approach the issue.

# 5G: China's dream to dominate world technology

The threat from Beijing highlights a convergence of interests between the U.S. and Europe

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U.S.-European cooperation on economic issues is at a low ebb. Efforts to rekindle interest in mutually advantageous policies such as the revival of the Transatlantic Trade and Investment Partnership are not likely to succeed for the time being.

Under the prevailing circumstances, trans-Atlantic disillusionment has settled in. A better approach than letting mutual acrimony languish would be to focus on a joint challenge — how to meet the resolute Chinese challenge to the industrial economies of the West.

Chinese President Xi Jinping's growing consolidation of power is giving ever more momentum to the ambitious Chinese plan to gain dominance of high-tech industries. This is nothing short of a head-on assault, given that these industries to date have been the main source of strength in the U.S. and European economies.

## Made in China 2025

Even the briefest of looks at the Chinese government's "Made in China 2025" program underscores the full scope of China's effort. Make no mistake about it: The explicit goal is not just to move up the ladder of industrial technology leadership, but to eventually dominate it.

The goals are as ambitious as they are mercantilist: Chinese companies are to control 70 percent or more of domestic consumption in 10 key industries by 2025.

China's list of the targeted industries constitutes a particularly direct threat to the economic pillars of both German and American industry. It includes aerospace, semiconductors, autos and robotics sectors, to name just the most visible.

One area of special concern is telecommunications technology. It is not just important as a major industry but, via the information technology space, will also increasingly be a driver of the entire industrial economy in coming years.

We are all aware that 5G is a crucial enabling technology of the future. It is needed for a multitude of purposes that only begins with building the "internet of things" and transitioning to autonomous vehicles.

5G also accommodates the transmission of massive amounts of data for analysis and artificial intelligence applications, as well as meeting the growing demand for mobile videos and video gaming.

To underscore 5G's centrality even more, any serious effort to improve cybersecurity and ensure the integrity of major systems



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like the electric grid depends on 5G technology as well. So do modern wireless systems that will need a huge increase in the transmission speed and bandwidth of their telecommunications infrastructures.

## A massive investment

Building out that infrastructure in and of itself will involve hundreds of billions of dollars of investment on a global scale. Whoever captures major parts of the market will be in a strong position to compete in new areas like the internet of things.

For national security and cybersecurity purposes, it is important for the United States and its allies to be able to rely on the safety of this infrastructure.

But that is clearly not the game plan the Chinese have in mind. Their ambition, upon which they are acting with great determination, is to control the access to all sorts of data collection.

Inside their own country, China already monitors the daily life of its citizens. The new 5G standard has the potential to extend this capability on an international scale.

After all, whoever sets the standards for the new 5G technology will have the upper hand globally in extending surveillance and data mining on an unprecedented new scale.

## Digital object architecture

China's leadership, no longer content with being a "technology taker" as during the previous rounds of IT development, intends for their country to lead in this race. To that end, it is working on introducing a new technology, called digital object architecture.

If core 5G standards are adopted on the Chinese model, equipment manufacturers will have to license them on Chinese terms. The dangers to privacy and security of com-

munications are heightened in this scenario. Chinese firms will also have the upper hand in equipment markets.

Forever seeking competitive advantage, China deliberately uses its huge market size to convince outside firms to use those standards. This effort also goes well beyond "just" the 5G field.

4G was crucial to development of new apps and related services such as Uber and Airbnb. Telecom expert Roger Entner goes so far as to argue: "The dominance that Google and Apple have over the mobile ecosphere could not be possible without America's 4G dominance." 5G will be equally important to the internet of things and artificial intelligence apps.

## Funding R&D

The standard setting issue aside, through its "Made in China 2025" program, China also pours huge amounts of money into research and development of all types of software and hardware needed for 5G.

This includes subsidizing both research and building of new production facilities and related equipment. For instance, for advanced semiconductors China has targeted around \$160 billion alone for supporting the next generation of semiconductor technology and \$180 billion for 5G infrastructure build-out.

We also cannot close our eyes to the way in which the Chinese government encourages state-owned and state-guided companies. It wants them to acquire or invest in the companies and technologies in the industrialized world that are leaders in all phases of software and hardware needed for 5G.

The Chinese government often subsidizes these acquisitions in opaque ways. That it also makes it difficult for foreign firms to

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operate in China and forces those who do so to share their technology has long been known.

## Intellectual property problem

As the world's largest consumer of semiconductors and memory chips, China has collected considerable influence in this sector. Part of its "knowledge bank" is due to Chinese firms regularly trying to violate patents and other intellectual property.

If we want to protect our own industrial future, we should urgently take note of the fact that many of these tactics are banned in the rules of the World Trade Organization.

With its impact on the nascent internet of things, as well as its parallel efforts to dominate the electric vehicle industry, Chinese efforts on 5G are a particularly major challenge to the German and Japanese automotive and semiconductor firms.

To maintain technology leadership, European and U.S. industrial firms, as longtime global technology leaders, must therefore take six specific, concerted policy initiatives.

## Six specific policy initiatives

First, they must redouble their efforts to protect patents around the world, including the need to limit the reach of antitrust authorities over patent licensing.

Second, they have to work on improving conditions for private firms to benefit from basic and applied research in technology and software.

Third, they have to cooperate in the WTO to use existing rules or craft new ones as needed to discipline Chinese subsidization, dumping, forced technology transfer and unfair trade practices of state-owned enterprises.

Fourth, they must be vigilant in maintaining the private sector-led model for standard setting in the telecommunications field.

Fifth, they should work cooperatively to develop rules on foreign investment responsive to the state-directed and subsidized policies now employed by China.

And finally, sixth, the national security teams from NATO allies and Japan should cooperatively address the questions to cybersecurity related to the development and implementation of 5G systems.

## The value of working together

It is to be hoped that collaboration to meet this challenge will result in Europe and the U.S. in particular to gain new confidence in the value not only of working together, but also of finding ways to improve the existing liberal economic architecture.

The present protectionist and centrifugal forces will only be reinforced if the Western allies fail to address Chinese economic ambitions without blinders and with determination.

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# Japan's bounce is a parable of these economic times

The central bank is easing off stimulus as confidence and exports rise and companies begin to spend

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In a year of economic surprises, mostly good ones, Japan is right up there.

The decades since the country's asset bubble burst in the early 1990s have seen many false dawns, so no one was rushing to call this a new day. But it's time.

**Confidence among big manufacturers is the highest in a decade and exports have increased every month for a year.**

A fair number of economists are now forecasting that the Bank of Japan will begin formally withdrawing from the huge stimulus deployed to combat first deflation and, more recently, too-low inflation. A stealth taper has already occurred: Asset purchases under the BOJ's quantitative easing program totaled about ¥60 trillion in the year through November, short of the annual target of ¥80 trillion.

This one seems to have crept up on us. All of us. I've raised the topic of Japan with central bankers, current and former officials, and investors, and the refrain has always been: "Well, of course, Japan is the outlier; Fed first, then ECB and BOE and, as you know, Dan, Japan is a special case."

True, its problems aren't trivial: Chiefly, a shrinking and aging population and infla-

tion that's about half the 2 percent target. But that is all well-documented (translation: the country's many detractors harp on it constantly). Let's look at what is going right: Confidence among big manufacturers is the highest in a decade, exports have increased every month for a year and companies are dusting off their capital spending plans.

So isn't it time Japan joined the global "stimulus withdrawal party"? (That's the more sober after-party once the punch bowl has been watered down. But it is cause for celebration in its own way!) Japan's QE will continue, for sure, but that may obscure a big shift in the outlook. Purchases will likely decrease to about ¥44 trillion next year, according to a Bloomberg survey of economists. More than a third of the economists also expect the BOJ to raise its target for the 10-year bond yield from the current zero.

Perhaps the surest sign that change is coming is the central bank itself. BOJ Gov. Haruhiko Kuroda set hearts aflutter in Zurich last month when he indicated that interest rates set too low can harm financial institutions, hampering the conduct of monetary policy. Kuroda tried to walk back any suggestion that such a phenomenon applied to Japan right now.

Not everyone is convinced. Kuroda rarely misspeaks. He knows the value of trial balloons and how investors are likely to respond. He has also spoken about the tactical value of surprising people. After all, he once occupied one of the most sensitive



BOJ Gov. Haruhiko Kuroda has plenty to celebrate as 2017 winds down. BLOOMBERG

posts in international finance: vice minister for international affairs in the Finance Ministry. That was in the late 1990s and early 2000s, when Japan intervened regularly in currency markets. It rarely happens now. The famed "Mr. Yen," Eisuke Sakakibara, was his immediate predecessor.

So the world economy ends the year not just with a synchronized upswing in growth, but with the makings of a synchronized exit

from easy money. As I have written, trajectories will differ, as do the starting points. It's direction that's important. Each day it becomes clearer and clearer.

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