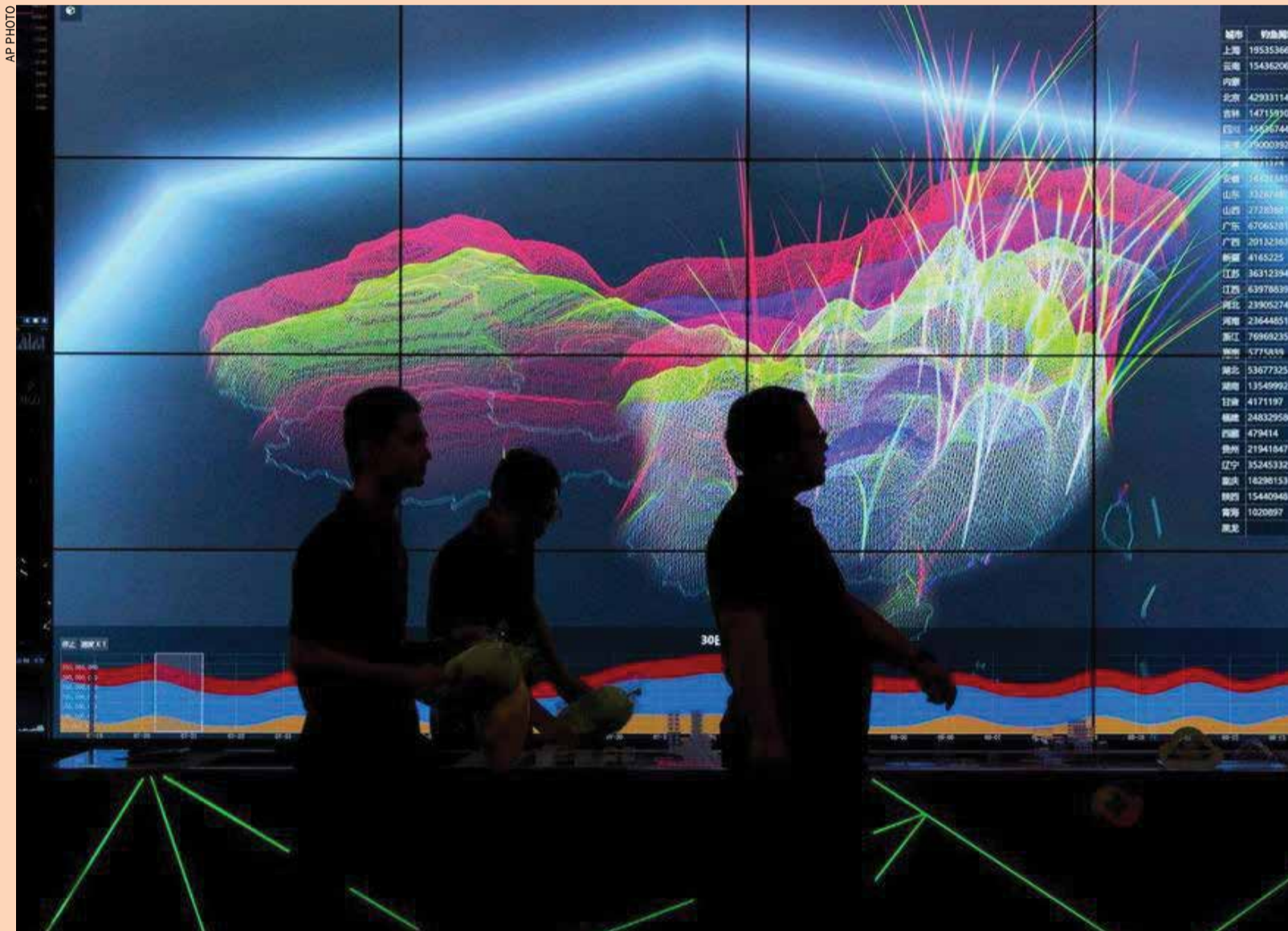


TECHNOLOGY

Remaking China



By Louise Lucas

Tim Byrnes is an unlikely symbol of China's bid to become the world's high-tech superpower. For a start he is Australian. Yet the 39-year-old quantum physicist's decision to swap a research post in New York for Shanghai goes some way to explaining the lengths to which Beijing is going in its efforts to upend the world order.

"Quantum physics is very strong in China," says Mr Byrnes. "The top groups are as good as anywhere in the world [...] and doing some amazing things."

Mr Byrnes is working to develop new technologies that will ultimately, he hopes, help deliver the holy grail of the sector - a quantum computer. His position as assistant professor of physics at New York University Shanghai is the result of a global recruitment drive to hire 10,000 of the world's brightest minds. Recruitment forms part of a broader strategy to build China's technological might alongside efforts to restructure its industrial policy through a scheme known as Made in China 2025. Billions of

dollars have been pumped into research and the acquisition of overseas assets, unnerving global rivals.

In the past two years alone, China has announced more than USD110 billion worth of tech merger and acquisition deals, according to Dealogic, triggering national security fears due to Beijing's role in some of the deals. The Made in China plan was characterised by Robert Atkinson, president of the Information Technology and Innovation Foundation, to the US Congress in January as an "aggressive by-hook-or-by-crook strategy that involves serially manipulating the marketplace and wantonly stealing and coercing transfer of American know-how."

Born out of a drive to modernise its army and navy to keep pace with

the US and Russia, China's state-backed programmes in science and technology have acquired a more civilian bent in an effort to put the country at the forefront of areas including artificial intelligence, biopharmacy and electric cars.

President Xi Jinping last year set out the objectives behind the spending, describing science and technology as "the main battlefields of the economy." These priorities were further reinforced at this month's session of the National People's Congress, China's parliament.

If successful, the plan could mark a fundamental shift from an economy that earned a reputation as a copycat manufacturer to one that is setting the pace. China has some form. Its "BAT" tech trinity of Baidu, Alibaba and Tencent has

enhanced the models those companies aped from Google, eBay and Facebook, but its goal to create national champions in areas like semiconductors and AI represent a far bigger step. The Mercator Institute for China Studies, a Berlin-based think-tank, last year described the plan as being the "building blocks of an overarching political programme," adding: "In the long run, China wants to obtain control over the most profitable segments of global supply chains and production networks."

Mr Xi's clarion call is recognition that competitiveness in technology is one of the three pillars, along with economic and sovereign might, on which any modern superpower stakes its claim. The need is made more acute by slowing domestic growth and concern that the much-touted rebalancing, from an investment-led economy to one driven by consumption, is failing to convince.

There is also an element of old-fashioned fear: the concern of being reliant on technology from overseas has only intensified after Donald Trump's election as US

president on the back of protectionist trade rhetoric.

"From semiconductors to e-commerce, Mr Xi has unabashedly trumpeted the goal of making China the 'master of its own technologies'," Mr Atkinson told Congress.

Made in China 2025, launched two years ago, is one of a patchwork of schemes designed to advance the country's tech goals. Modelled on Germany's Industrie 4.0, it forms a blueprint for diverting manufacturing away from the low-value labour-intensive plants for which the country is best known into the age of smart technology - doubly useful as the cost of labour rises. Leveraging big data, cloud computing and robotics, it proposes vast automation of industry and aims to lift the domestically produced content of components used in China to 70 percent by 2025, from between zero and 30 percent today.

Beijing has done this before in individual sectors. Frustrated that it was spending more on importing semiconductors than oil it has, since 2014, spent \$150 billion through a mixture of M&A and domestic subsidies on developing the sector. It has also poured money into its own national champions, led by Semiconductor Manufacturing International Corp, while encouraging multinationals such as Intel and Qualcomm to set up shop in China.

The expansion has not been without controversy. Regulators, most notably the US Committee on Foreign Investment (Cfius), have blocked several deals over fears on national security. Casualties last year included a \$3 billion Chinese consortium offer for a US-based lighting unit of Philips, the Dutch group, which was thwarted by Cfius. In Europe, the €670 million sale of German chip equipment maker Aixtron to Chinese investors also fell foul of regulators.

Most experts predict that there will be even tighter scrutiny on Chinese bids to buy overseas tech assets in future.

However, with a growing number of Chinese companies setting up research and development centres or small operations in the US and other markets, that could become less of an issue. Daniel Roules, managing partner at law firm Squire Patton Boggs in Shanghai, says these ventures could be used as conduits for acquisitions, undermining the national security argument. "If a foreign-owned company that has operated in the US for several years acquires a tech company today I'm not sure how much Cfius would look at that or people would worry about it," says Mr Roules, adding

China's need for competitiveness in technology is made more acute by slowing domestic growth



Technology: Remaking China (continued)



that Chinese companies operate on long-term horizons.

If semiconductors represent Beijing's boldest foray into shaping the tech industry, the influence of the state can be seen in other private sectors. Baidu, Alibaba and Tencent, which are listed overseas and boast a combined market capitalisation of around \$600 billion, have worked on joint projects with the state.

The National Development and Reform Commission, which sets economic and social strategy, last year announced the creation of 19 national data labs, most at universities, as part of the Made in China programme. Alibaba's cloud business is participating in two labs: the

first to support online data mining and cloud-based processing for the industrial sector; the other will build a platform for big data software.

"China has been tapping into global commercial and scientific networks, promoting technology transfers, foreign R&D investment and training of Chinese scientists and engineers overseas," says Michael Raska, assistant professor at the S Rajaratnam School of International Studies at Singapore's Nanyang Technological University. "The underlying strategy behind this endeavour became the concept of 'indigenous innovation': to identify, digest, absorb, and reinvent

select foreign technologies in both civil and military domains."

Luring specialists like Mr Byrnes to China is "no different to what they do with football - buying footballers so they can pass skills on," says Paul Haswell, Hong Kong-based partner at Pinsent Masons, the law firm.

State-backed schemes, notably Qianren Jihua or Thousand Talents - which brought Mr Byrnes to China - are designed to pluck some of the sharpest minds out of Silicon Valley, Boston and elsewhere and transplant them to hotspots like Beijing or Shenzhen.

Launched a decade ago, the Thousand Talents programme of-

fers deals that most multinationals would struggle to match. On top of an RMB1 million (\$144,000) welcome package, there are guaranteed school places for children and job offers for spouses. Applicants are assessed for their qualifications and achievements, but owners of technology or intellectual property score highest. Successful candidates can choose to take up roles in the public or private sector.

Anecdotally, the scheme has spawned developments in areas ranging from gene sequencing to clean energy and national security technology.

In return, the Chinese employer takes a cut of any patents or inventions - important markers in Beijing's efforts to measure its progress. Mr Byrnes has 42.5 percent ownership of any patents he develops, while the rest goes to the NYU Shanghai - a joint venture of New York University and East China Normal University of Shanghai. The ratio is the same as the one he obtained in the US.

The programme has secured significant brainpower and in the process has lured some Chinese scientists home. Zhang Liang-jie, who left the country for the US after a PhD from the prestigious Tsinghua University, is one such recruit. With 40 invention patents to his name he has returned home to work on AI as chief scientist at enterprise software group Kingdee in Shenzhen, the entrepreneurial cradle of China and Asia's nearest rival to Silicon Valley.

These national programmes are supplemented with a proliferation of local schemes, especially in tech hubs like Shenzhen and Hangzhou. Beyond these schemes there is also

direct poaching of the sort that is common in the west but has a shorter history in China. Late last year Baidu, the search engine, hired Lu Qi, a Microsoft veteran, to lead its push on AI. "If you can't buy the company, buy the head," quips one analyst.

The results have been mixed. Programme 863, which was created three decades ago to "fill the vacuum" of technologies with military and civilian applications, has pulled off some impressive coups. It built the world's fastest supercomputer wholly powered by Chinese-made processors, and implanted 3D-printed blood vessels made from stem cells into rhesus monkeys - raising the hopes of printing organs for human transplants.

The concern of being reliant on technology from overseas has only intensified after Donald Trump's election on the back of protectionism

But it has also been linked to murkier aspects of Beijing's drive. Scientist Huang Kexue was jailed for seven years in 2011 for stealing secrets from his employer, the US agribusiness group Dow AgroSciences. Among the groups he said he sent information to was Programme 863.

China is also drumming up plenty of work for lawyers on patent disputes and infringements. "IP, product liability, industrial espionage - these are used as competitive weapons," says one lawyer who works in China and the US.

Huawei, which holds the world's biggest trove of patents, fellow telecoms infrastructure group ZTC and the leading internet companies are "buying licences like crazy", says one lawyer. "Any company in China, if they have cash they will buy patents."

As testified by the M&A frenzy, subsidies and global talent drive, cash is not in short supply. The same, some feel, cannot be said for other countries, where funding is less consistent.

"The US is the birthplace of information technologies, the internet and both the civil and military information revolutions," John Costello, a senior analyst at intelligence agency Flashpoint, told Congress last week. "China's rise as a leader in quantum and related emerging technologies would signal an eastward shift in the locus of innovation."

VIEW FROM THE WEST

Traditional hubs of innovation fear impact

China's ambitions have sparked fear and loathing in European countries and the US, where the one-time tech leaders see their positions undermined by a country that combines deep pockets with a strong focus on developing its prowess in the field.

Their fears are twofold: that their own national security could be compromised, and that subsidies tilt the playing field in favour of Chinese companies. Multinationals in areas such as semiconductors often face a Faustian pact on doing business in China - market access in return for technology transfer.

The US Council of Advisors on Science and Technology told an already sceptical White House in January that Beijing's policies are "distorting markets in ways that undermine innovation, subtract from US market share and put US national security at risk."

Earlier this month the EU Chamber of Commerce in Beijing released a detailed critique of the Made in China 2025 blueprint and the potential blowback for multinationals. Jörg Wuttke, president of the EU chamber, described the plan as unusual in that it specified precise targets for market share, both domestic and foreign. That triggered global concern of "ste-

roid-fed" state companies swamping lucrative sectors with Chinese production, just as occurred in steel and other low-end manufacturing sectors over the past two decades.

China repudiated the claims in a government work report: "Foreign firms will be treated the same as domestic firms when it comes to license applications, standard-setting and government procurement, and will enjoy the same preferential policies under the Made in China 2025 initiative."

Companies have also defended government support. Speaking at this month's National People's Congress, Robin Li, chief executive of Baidu, said it was "necessary and important".

But even critics of China's policy note that blocking exports or deals can have unintended consequences. Addison Snell, chief executive of Intersect 360 Research, cites the example of export restrictions on some processing technologies, including the Intel processors for Chinese supercomputing upgrades. In the interim, he says, China developed its own. "What is certain is that the Chinese initiatives can no longer be thwarted by US export controls."

In Ryan health-care defeat, lessons for speaker in age of Trump

By Anna Edgerton

TWO weeks ago, Paul Ryan rolled up his shirtsleeves to deliver an energetic Power-Point presentation of a health-care bill he said conservatives have been “dreaming about.” On Friday, a chastened Ryan stood in the same spot, admitting that Obamacare would remain the law of the land.

Ryan sees himself first and foremost as a policy guy. But this was an attempt at pure power politics: redo the nation’s health-care system only 17 days after first revealing the legislative text to all of his Republican colleagues.

The result was an embarrassing defeat for Ryan and an early lesson in the limits of unified government, where control of both chambers of Congress and the White House isn’t enough to ensure that even the party’s highest priorities can get enacted.

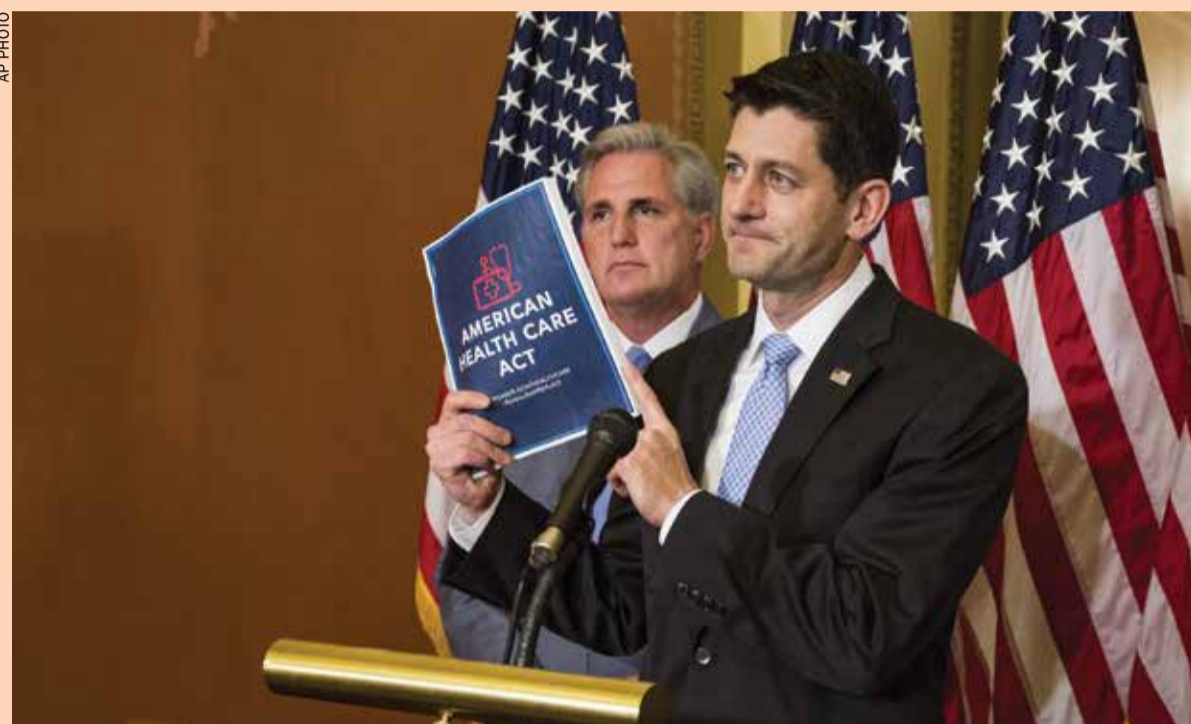
For Ryan, who has been speaker for 17 months, the question is whether he can take anything away from this episode to help him wrangle his divided conference, accustomed to obstructionism not action under eight years of Barack Obama. To have any hope for success on other Republicans goals such as tax overhaul, Ryan must also learn to work with an unpredictable president in Donald Trump, who insists he is standing by Ryan.

In this case, Ryan came up with a bill that he presented as a “binary choice” - repeal or keep Obamacare - but even scheduling a floor vote on the seventh anniversary of Obama signing the original law couldn’t rally enough Republicans to his side.

“The path to this ‘binary choice’ with no amendments and an artificial deadline, driven by an anniversary rather than progress on the bill, have caused this pause,” said Representative Warren Davidson, a Freedom Caucus member who now represents former Speaker John Boehner’s district in Ohio.

Need for speed

Ryan’s strategy was built on speed: move before industry groups, such as doctors, hospitals, pharmaceutical companies, could ramp up their lobbying efforts and gum up the bill. But the whole thing just moved too quickly for a plan overhauling an industry



U.S. House Speaker Paul Ryan, a Republican from Wisconsin (center) holds up a copy of the American Health Care Act

that directly employs more than 12 million people.

“You can’t set a date and work back from it,” said Drew Hammill, deputy chief of staff for Democratic leader Nancy Pelosi, who shepherded Obama’s Affordable Care Act through the House in 2009 without any Republican votes. “You have to build consensus first.”

And even as GOP lawmakers in both chambers were pleading for Ryan to slow the process down, outside voices wondered what was taking so long to deliver on the rallying cry that has helped secure electoral victories for Republicans since 2010.

“It’s a no-win situation for Ryan,” said William Hoagland, a former congressional GOP budget aide who is now at the Bipartisan Policy Center in Washington. “You’re going to either die by the gunshot or you’re going to be hung by a rope.”

Bound by pledge

Hoagland, who has known Ryan since they were Senate staffers together in the 1990s, said the speaker would have preferred to start with a tax overhaul, rather than health care, but Republicans felt bound by years of pledging to do away with Obama’s signature law. He said Ryan’s share of the blame lays with trying to rush the bill through the House to let the Senate straighten out the policy.

“Everyone wanted to get this out of the way quickly,” Hoagland said. “As fast and as far away from the 2018 election as possible.”

Heading into the climactic week, Ryan’s team had been whipping votes on the expectation that fulfilling a six-year-stale campaign pledge - and pressure from Trump - would be enough. Vote yes, they pleaded with centrists, and the Senate can make it better. To conservative holdouts in the House Freedom Caucus, they promised there would be more phases of legislation and regulatory changes to come.

Neither side was fully convinced Ryan satisfied their concerns. And then came Trump, who told lawmakers time was up and the vote had to happen immediately.

On Friday, as moderate votes melted away after last-minute concessions hacked out for conservatives, the real-world consequences of the hastily crafted bill helped sink it. Some of the very Americans who gave Republicans their majority - older, lower income, often in rural areas who are unprofitable to insure - stood to lose the most if Trump signed the bill.

‘Currently unacceptable’

“Unfortunately, the legislation before the House today is currently unacceptable,” Rodney Frelinghuysen, the chairman of the powerful Appropriations Committee announced Friday morning, likely sealing the bill’s fate. “It would place significant new costs and barriers to care on my constituents in New Jersey.”

Ryan’s bill was derived from the broad 37-page “Better Way” policy paper published by House Republicans in June of last year. But the bill itself

remained a secret until March 7. In the days before Ryan released the draft, Republican Senator Rand Paul and Democrats were combing Capitol Hill, reporters in tow, to find the secret reading room where a handful of Republicans were allowed to read the actual text.

When the criticisms started pouring in, Ryan defended his bill as the strongest measure that could be written to fit within the budget reconciliation process, which would allow Republicans to bypass a filibuster by Senate Democrats. He rebuffed efforts to make significant changes to the measure, at least until Trump began negotiating directly with conservative holdouts.

Ryan said many of the bill’s critics just didn’t understand the constraints of the process.

The result was an embarrassing defeat for Ryan and an early lesson in the limits of unified government

‘A little wonky’

“It gets a little wonky, it’s a little detailed, it kind of confuses people,” Ryan said on Fox Business Network on March 15.

“You just went through it very clearly,” Maria Bartiro-

mo, the host, said. “You say it’s confusing, it’s not. Our audience understands where you are and why you had to do it the way you did it.”

Ryan plans to use the next reconciliation bill for tax overhaul, so it too can be pushed through Congress without support from Democrats.

In the collapse of Ryan’s health-care measure lies an important lesson for the speaker: details and salesmanship matter, to fellow Republican lawmakers, the conservative groups that support them and constituents, who jammed the Capitol’s phone lines with complaints about the health-care bill.

The canceled vote also laid bare the stubborn fissures that continue to plague the Republican party. The far-right Freedom Caucus group of roughly 40 members proved they have the power - and the will - to defeat leadership’s agenda.

For now, Republican lawmakers still praise Ryan for his leadership. Despite rumblings from right-wing media, there is currently no overt movement to unseat Ryan as House speaker.

“Paul Ryan, he’s a very good man, he’s an eloquent speaker,” said Representative Mo Brooks of Alabama, one of the most stubborn opponents of the health-care plan. “I like the job he is doing. And I want him to stay as speaker of the House.”

Some cracks

Still, some cracks were beginning to show as the bitterness of falling short of repealing and replacing Obamacare began to sink in.

“House is supposed to be a deliberative body where outcomes are discovered, not dictated,” Justin Amash, another Freedom Caucus member, said on Twitter. “Compromise & consensus cannot be centrally planned.”

Congressional Republicans will continue struggling to reconcile their conservative principles with Trump’s more generous campaign promises. How does one write health-care policy, for example, that shrinks spending and the role of government with no cuts to entitlement programs like Medicare.

“The speaker is a human being,” said Joe Barton, a Republican from Texas. “He’s not superman.” **Bloomberg**

Mudslide buries Peruvian village, leaving little to claim

By Franklin Briceno, Barbablanca

GATHERED along the edge of a mountain, the men, women and children of Barbablanca watched in stunned silence as a river of mud washed over their small village.

The mud slid into windows, covering carefully made beds and school desks. It buried fields filled with avocado trees and the village's prized ripe green cherimoya fruit. It left Barbablanca's hydroelectric plant an enclosure of metal rods planted in a blanket of sludge.

"We've lost everything," said Ricardo Lazaro, 73, whose life's savings were put into building a small hotel destroyed in the worst environmental calamity to strike Peru in nearly two decades. "I don't know who will help me."

The rains pummeling Peru, brought about by a warming of Pacific Ocean waters that climatologists are calling a "coastal El Niño," have left 85 dead, crippled the nation's infrastructure, ruined thousands of fields of crops and destroyed 800 villages, most much like Barbablanca.

Situated at the foot of the Andes 65 kilometers from the capital city of Lima, Barbablanca is a community of 160 people, many of whom are small farmers de-

AP PHOTO



A flooded neighborhood is seen from the air in Piura

icated to growing the sweet, heart-shaped cherimoya. Life in Barbablanca revolves around the crops, a red schoolhouse, a medical clinic and a hydroelectric plant at the base of a giant mountain.

In January, the residents of Barbablanca began noticing steady, unusual rains, and in early March, the downpours became worrying. For two weeks, it rained for more than six hours a day. The residents decided that if rainfall worsened and a

mudslide seemed imminent, they would flee up the mountain to higher ground.

Mudslides have struck throughout Peru in March as the rains have continued. On cellphone cameras, Peruvians have captured video of sudden gushes of water, mud and debris that swept up trucks, buses, people and cows. One woman, Evangelina Chamorro, survived after being swept nearly 3 kilometers from her home and emerging near a bridge covered in muck.

On March 16th, the rain began to fall on Barbablanca so fiercely that being outside almost felt "like a shower," recalled Lazaro, who with his wife owns a seven-room hotel.

When the sound of thunder rumbled in the sky, Lazaro put a lock on the hotel door and decided to leave.

"Let's get out of here," he told his wife, joining several dozen other residents, a few in ponchos and others carrying plastic tarps, up the mountain.

They were perched high up on a gravel road when the unforgettable sound of a powerful current, churning with rocks and debris, filled the air. Suggeidy Rivera, 25, cried as she huddled with her three small children.

"I think we are stuck up here," said one man as he recording a video later uploaded on YouTube. "There isn't a way to get out."

When the mudslide stopped and residents were able to climb down and assess the damage, they found a village buried in mud. All the furniture in Lazaro's hotel had been swept out. The wall that divided his property from a neighbor's had been crushed. An avocado tree rested in his kitchen.

"This has been the work of all my life," he said tearfully on Friday.

An entire village left homeless,

the residents of Barbablanca have been sleeping in a partially covered patio at a hydroelectric plant in a nearby village. There are no bathrooms and the families sleep on the bare ground, waking up with backaches. Most now own only the clothes that have been donated to them.

Peru is expected to spend at least USD3.75 million in repairing bridges and roads, according to the Central Bank, but the economic toll is still accumulating. Another two weeks of rain are forecast and the state meteorological agency expects the ocean warming causing the storms to continue through April.

The Peruvian Red Cross and the International Federation of Red Cross and Red Crescent Societies announced the launch of an emergency appeal Saturday for \$4 million to support 50,000 people in the hardest hit regions in northern Peru. Red Cross officials have expressed concern about the potential for outbreaks of mosquito-borne illnesses as the recovery drags on.

"This really is the worst disaster for the people of northern Peru in decades," said Michele Detomaso, head of the IFRC team in Peru. "Its severity - and the speed with which waters came in - surpassed the capacities of the population to cope."

Even in villages like Barbablanca relatively near the capital, there is little hope that residents will be able to entirely rebuild. At his age, Lazaro said he is clinging to the encouragement of his neighbors.

"They tell me, 'Lazaro, get up, make an effort,'" he said. "And I have to." **Bloomberg**

ASK THE VET

by Dr Ruan Du Toit Bester



STUDYING FELINE ANATOMY AND PHYSIOLOGY

Feline anatomy is an interesting and unique subject in the animal kingdom. Cats have extreme strength and agility for their size, along with heightened senses and the ability to reason. Their eyes are complex organs with keen eyesight and a broad range of hearing. Due to the intricate nature of a cat's body and physiological properties, a delicate balance must be upheld with care. Cats are extremely resilient, but when the immune system or inner organs are affected by infection or disease, the outcome is often bleak.

Cat anatomy

The feline anatomy consists of many similarities to that of other species, namely the human body. A cat skeleton has a few more bones, but many of these are identical to those of the human skeleton. Uniquely, a cat's collar bone is unattached to the other bone structures, and its muscular structure is designed for agility, allowing it to leap, twist and fall with grace. Cats have

30 teeth and claws that not only help with hunting and foraging, but assist the cat in maintaining balance, and scratching.

Cat digestive system

Since a cat's diet in the wild consists primarily of the meat of other animals, the feline anatomy contains a digestive system that creates acids and enzymes appropriate for the breakdown of food and destruction of bacteria. A cat's teeth also play a role in digestion by tearing sharply at meats and other substances. Much like other species, the salivary glands, esophagus, stomach, intestines, liver and kidneys work together to aid the digestive process.

Cat nervous system

A cat's nervous system is a unique part of the feline anatomy. Cats are born both blind and deaf, and these senses normally don't develop until about two weeks of age. The nervous system fully develops as the kitten ages, barring any trauma or infection that can hinder this process. The cen-

tral nervous system is responsible for the brain and spinal cord messages, the peripheral nervous system affects muscles and movement, and the autonomic nervous system controls the involuntary functions of the body.

Cat reproductive system

The reproductive system is the part of the feline anatomy that's responsible for mating, copulation, pregnancy and birth. Female cats, or queens, can produce 2 to 3 litters per year and can give birth to multiple kittens per pregnancy. Cats will usually not go into heat in the winter months, and spaying or neuter will not only prevent unwanted litters and strays, but can also make for a calmer and more relaxed house pet.

Feline behavior

A cat's behaviour is usually evidenced by its stance or meow. The behavioural aspects of the feline physiology lead us to believe that it's a very intelligent animal. Cats have reasoning abilities, and express anger with certain posture, movements and sounds. The temperament of cats varies greatly and can swing from docile and laid back to finicky and aggressive, even pertaining to the same cat. A quick change



in attitude or evidence of unexpected hiding or aggressive behavior can indicate a problem. Cats don't react well under stressful conditions and an examination may prove helpful in this case.

Hope this info helps with understanding cats more

Till next week

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