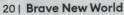


Forbes Asia

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INSIDE





New World Development's Adrian Cheng aims to create a new legacy with his Victoria Dockside in Hong Kong, showcasing his K11 brand fusing "art, people and nature."

By Robert Olsen



28 | Fixer Upper

Billionaire Tang Shing-bor made—then lost—a fortune, only to rebound investing in the city's old factories and warehouses. Now he's betting big that recent political turmoil is a signal to buy more.

By Pamela Ambler

HONG KONG'S 50 RICHEST

36 | Mixed Bag

The city's richest held their own in a challenging year.

By Grace Chung and Naazneen Karmali

COVER PHOTOGRAPH BY KEN WU FOR FORBES ASIA

TECHNOLOGY

14 | Agent Provocateur

United Talent Agency's Hana Tjia is pitching brands eager to reach young female gamersand willing to pay seven figures to do it.

By Dawn Chmielewski

16 | Zero-Pollution Fuel

Hydrogen vehicles keep flopping, but entrepreneur Trevor Milton thinks he can finally make them pay.

By Alan Ohnsman

ENTREPRENEURS

18 | High Tea

After three generations, the Bigelow clan has steadfastly remained upscale in a down-market world. All it took was bagging the family drama.

By Chloe Sorvino

FINTECH

45 | Connecting a Million Dots

EquBot is on a quest to prove that computers can outsmart human stock pickers.

By William Baldwin

54 | Fintech's Secret Bank

Many popular finance apps are enabled by a tiny New Jersey bank with overinflated ambitions.

By Antoine Gara, Nathan Vardi and Jeff Kauflin

59 | Dawn of the Neobanks

Dozens of digital banks are open for business-and VCs are betting that they'll replace your corner branch.

By Jeff Kauflin

FEATURES

64 | The Fall of Overstock's Mad King

Patrick Byrne, founder and CEO of former e-tailing giant Overstock.com, resigned last August, saying his involvement as an informant in the investigation of accused Russian spy made performing his duties impossible. That's not the whole story. This is.

By Lauren Debter

70 | The Host with the Most

With his acquisition of Starwood three years ago, Arne Sorenson created the world's largest hotel empire. Globally, 20% of new hotel rooms being built are now Marriott properties-and Sorenson still thinks his company isn't big enough.

By Biz Carson



FORBES LIFE

74 | Artisanal Bubbly

Rodolphe Frerejean Taittinger is bringing a new approach to making champagne.

By Justin Doebele

10 | Fact & Comment **Steve Forbes**

International trade is good.

12 | Tech Connector Rich Karlagard

The war on prosperity.

13 | Economics Matters Yuwa Hedrick-Wong

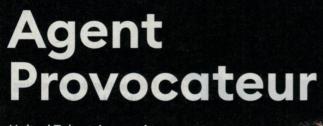
Let billionaires be billionaires.

76 | Thoughts

On secrets.







United Talent Agency's HANA TJIA is pitching brands eager to reach young female gamers—and willing to pay seven figures to do it.



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Not far from the giant screens flooding this latest Electronic Entertainment Expo with videogames, Hana Tjia is leaning against a cinder-block wall and typing furiously on her phone. The United Talent Agency representative is coordinating informal meetings at the giant gaming convention with M.A.C. Cosmetics, whose execs flew from New York to meet her clients—Valkyrae, 28, and Alexia Raye, 23.

They'll have to wait. Enclosed in glass booths, the two women are playing *Borderlands 3*, offering a preview of the shooter game to about 4,000 of their combined 1.1 million Twitch followers and to onlookers in the Los Angeles Convention Center. Their devotees, many also female, represent a new market for the high-end cosmetics brand. Sales of M.A.C. lipsticks inspired by the mobile game *Honor of Kings* were "gangbusters," say the execs. A chance for a repeat success has sent them into the crowd of mostly male gamers in search of Tijia.

Most advertisers "have been thrilled to have these conversations, because I think they have like a stereotype of what a gamer is, and when they see my roster they're just like, 'Okay, this is very different. I want to know more," Tjia says. The obvious first difference: "The majority of my roster is female."

The 26-year-old agent acts as a kind of sherpa to companies navigating the unfamiliar terrain of Amazon's Twitch videogame streaming. Young adults are watching eight fewer hours of TV a week than four years ago, according to Nielsen. That's forced advertisers to look elsewhere—they're expected to spend \$3.3 billion on ads in games this year, up 16% from last year, says eMarketer. Mastercard, State Farm, Honda and Nike sponsor esports—organized videogame competitions—and some are backing individu-

al gamers with big online followings. Deals can reach as high as \$10 million.

Advertisers have also discovered female gamers, an often-overlooked group, even though 46% of gamers are women, says the Washington D.C.-based Entertainment Software Association. Propelled by the popularity of *Fortnite* across genders, female streamers Imane "Pokimane" Anys (3.8 million Twitch followers) and Rachell "Valkyrae" Hofstetter (945,000) have emerged as stars.

"There's a ton of little girls who are growing up wanting to become a gamer," says Tjia, a Canadian raised on reality TV. "There's a huge influence that the females have."

Clad in a white T-shirt, black leather jacket and jeans, Tjia looks more like her gamer clients than a traditional Hollywood agent, the Michael Ovitz-style smooth talker who lunches at The Grill on the Alley in Beverly Hills.

Tjia's haunts are more offbeat. She frequents Magic Castle, a private club that features magicians, and scouts future clients on Twitch, Instagram and YouTube. If they've got the right stuff, she coaches them in the nuances of hashtags and photo shoots, joins them at gaming tournaments and fields panic calls, like one from Streamer Camp, a type of boot camp with costumes.

The job is lucrative, though not in the millionaire mold of superagents like Ovitz and his legendary 10% fee. Tjia has worked for UTA since it bought the firm her husband and a business partner cofounded to manage Snapchatters and other online influencers. *Forbes* estimates an agent like Tjia makes around \$75,000 a year, plus an end-of-year bonus, while senior agents can earn as much as \$300,000. (UTA declined to comment.)

As her clients' fortunes rise, so should the agent's. Mastercard named Pokimane and Lily Ki (LilyPichu), another Tjia client, as brand ambassadors for its promotion pegged to a *League of Legends* tournament. Gaming-headset maker HyperX spent an estimated \$910,000, according to researcher iSpotTV, for three airings of an ad shown during the 2019 NBA Finals that included Pokimane. Tjia has inked deals with hot social network TikTok (for gamer Leslie Fu, a.k.a. Fuslie), Geico and Hot Pockets—and cosmetics may be next.

"People don't equate makeup with gamers," says M.A.C. communications director Cary Neer. "It's a whole new world for us." •

STAR GAMERS OF TWITCH



Imane Anys

Twitch gamer tag: pokimane

3.8 million followers

23-year-old Canadian transplant who left McMaster University's chemical engineering program after her second year to pursue a career in gaming, this influencer has emerged as one of the most popular female streamers on the platform.



Rachell Hofstetter

Twitch gamer tag: Valkyrae

945,000 followers

Hofstetter was among the Twitchstreaming royalty to headline an event that closed out the video game industry's Electronic **Entertainment Expo** conference-the Fortnite Pro-Am. The show, staged at the Forum in Inglewood, a historic Los Angeles sports venue that once housed the "Showtime" Los Angeles Lakers under Magic Johnson, showcased Twitch streaming personalities paired with celebrities.

Zero-Pollution Fuel

Hydrogen vehicles keep flopping, but entrepreneur TREVOR MILTON thinks he can finally make them pay.



Trevor Milton rumbles toward his audience of 2,000 in the ultimate green-energy vehicle—a red beer wagon drawn by eight Budweiser Clydesdales. "They represent how America was built," he says of the massive horses. The audience, a mix of trucking execs, shippers, journalists and Anheuser-Busch

InBev reps, roars its approval into the cavernous event center in Scottsdale, Arizona, that's hosting the April launch party for Nikola Motor Co. Then comes Milton's pitch. Just as diesel replaced the Clydesdales, a new fuel source is going to make petroleum obsolete: hydrogen.

The most abundant element in the universe is a zero-emission fuel. Convert it to electricity, and the only by-products are water and heat. Hydrogen, says the 37-year-old founder and chief executive of Nikola, can power heavy-duty trucks. It goes into a fuel cell and comes out as current to power electric motors.

Trevor Milton, the founder and CEO of Nikola, in front of a Nikola semi cab at the company's headquarters in Phoenix. Hydrogen trucks should succeed where cars failed because "with trucks, you're building high margin, low volume."

Hydrogen power has been an enticing mirage for six decades. General Motors unveiled a hydrogen Electrovan prototype in 1966 but never made a business of it. Shares of Ballard Power, a pioneer in fuel cells, climbed to \$140 in 2000 but now languish below \$5. President George W. Bush poured taxpayer money into hydrogen-fueled-car research, but fewer than 7,500 hydrogen-fuel-cell vehicles are on U.S. roads now.

From a Phoenix headquarters that will also build prototype semis, Milton has raised \$265 million from such investors as the San Francisco-based hedge fund ValueAct, the Norwegian energy company Nel Hydrogen and Worthington Industries, an Ohio-based metals manufacturer. But he needs at least \$1 billion to build a factory in Coolidge, Arizona, put the first trucks on the road and open ten fueling stations in California and Arizona.

"It's not just about building one part. It's about actually delivering a product that can compete against a diesel and beat it," Milton says. Elon Musk, whose battery-powered Teslas have done much to wean U.S. drivers off gasoline (and who plans to sell a battery-electric big rig), derides "fool cells" and has called hydrogen "stupid." But hydro is looking less stupid these days.

For one thing, a growing surplus of solar energy in the U.S. Southwest opens the possibility of siphoning off excess power at midday to make hydrogen fuel cheaply out of water. For another, batteries aren't suited to long-haul trucking. They take a while to recharge, and they're heavy.

Nikola's truck cab—a 1,000-horsepower system comprising carbon fiber tanks, hydrogen fuel and a fuel-cell stack—will push an 18-wheeler up to 1,200 kilometers and weighs 9 metric tons. The same juice would demand a lithium-ion battery that would add at least 2.3 metric tons to a truck with the same range, says Nikola.

AB InBev's order for 800 Nikola semis, leased for seven years at up to \$1 million each (fuel included), goes some way toward proving hydrogen's case. If Nikola can deliver the trucks, the brewer will use them to haul Budweiser from the West Coast to distribution centers hundreds of kilome-

ters away. Subject to the same "if," Nikola will collect on \$10 billion in preorders from such firms as the fleet operator U.S. Xpress.

Milton isn't the only hydro visionary. Hyundai is putting \$6.7 billion into hydrogen projects. In July the engine maker Cummins bought Hydrogenics, which makes fuel cells, for \$290 million. Next year, GM and Honda will open an \$85 million fuel-cell factory in Michigan, and Toyota is opening a refinery at the Port of Long Beach to turn cow manure into hydrogen to power trucks developed with Kenworth.

A lifelong garage tinkerer, Milton became obsessed with how things work when he was 6 during a train ride arranged by his father, a retired Union Pacific manager. He tried college in Utah but dropped out after less than six months. A Mormon mission to favelas in Brazil got him thinking about wider problems, particularly environmental ones. "That was probably one of the biggest eye-openers of my life," he says.

In 2010, he founded dHybrid Systems, a Salt Lake City designer of natural gas fueling systems for trucks. In 2014 Worthington bought that business. Milton left for Nikola, recruiting his former mentor at Worthington, Mark Russell, to be the startup's president. Milton aims to build 25 trucks next year and 400 in 2021. If all goes well, by 2022 he'll be making eight metric tons of hydrogen daily from renewable electricity at each station, enough to keep 250 trucks running. He thinks he can get the cost of making a kilogram of compressed hydrogen gas, which provides the same amount of energy as a gallon of diesel, down to \$2.50—far less than the California hydrogen retail price of \$14. He wants to expand his fueling capacity from the West to a 700-station cross-country network by 2028.

Change is coming, perhaps faster than the manufacturers of diesel engine trucks expect. The European Union passed emissions rules that could ban diesel trucks by 2030; California is leaning toward a similar mandate. Milton claims that Nikola has a lead of three to five years on his rivals. "Whether you're Republican or Democrat or independent, no one wants to go jogging down the road and breathe diesel smoke," he says. •



If you're moving goods from A to B, you're almost certainly doing it on 18 wheels: More than 90% of all transportation of products within the United States is by truck. Those big rigs hemming you in on I-95? They're likely full of laptops, cans of tuna, thresher parts, bagged salad, gasoline and automobiles. (Not all in the same truck, presumably.)

Top Freight Shipped by Dollar Value, 2017

- 1. Motorized vehicles (complete cars, pickups, car and truck bodies, truck cabs): \$903.9 bil
- 2. Electronics (personal computers, servers, laptops, mainframes): \$587.6 bil
- 3. Gasoline: \$586.8 bil
- 4. Misc. Foodstuffs (fruits, vegetables, dry goods, canned goods): \$585.9 bil
- **5. Machinery** (farm and construction equipment, oil/gas machinery, woodworking/paper equipment): **\$510.6 bil**

Sources: Bureau of Transportation Statistics; Federal Highway Administration's Freight Analysis Framework.

TRUBBLANT

High Tea

After three generations, the BIGELOW clan has steadfastly remained upscale in a down-market world. All it took was bagging the family drama.



Cindi Bigelow rips open a bag of her family's Earl Grey tea, splaying the contents out on a crisp white napkin to highlight the dark, black leaves inside. With the scent of Calabrian bergamot lingering, she tears open two more bags from much larger competitors, dumping each onto the napkin, huffing at the contents: synthetic white flavor crystals in one, pieces of light brown tea plant stem, a bittertasting filler, in the other.

"People say, 'Oh, look at that little conventional old product line. It's so not cool and relevant.' But I'm like, 'Wait, whoa-whoa-whoa!" she says. "We put everything into the product. Everything."

The CEO of Bigelow Tea revels in this show of quality—for her, a key ingredient to remaining the top specialty tea seller in the U.S. The Bigelows have accomplished what is only a half-steeped dream for most family businesses: passing the company down from the first generation to the second and, with Cindi, 59, to the third.

A lot of credit goes to holding firm to tradition, including still using the recipe Cindi's CEO Cindi Bigelow drinks a cup of Constant Comment at company headquarters in Fairfield, Connecticut. The plant attached to the offices seals 178 tea bags every minute.

grandmother created in her kitchen in 1945 for its signature Constant Comment tea. Her father, David, took over the business from her grandmother in 1959 and ran it for 45 years, transforming it from a niche, mail-order gift shop brand into a grocery store staple. Cindi, the younger of his two daughters, joined in 1986 armed with an M.B.A. from Northwestern University and spent two decades working her way through the business, starting in the accounting department.

This is not to say the Bigelows didn't spill a little tea along the way. They both had to contend with a generational transfer—a particular challenge for David—and keeping up in a \$12 billion global industry that favors mass commercialization, consolidation and low costs. Nonetheless, Fairfield, Connecticut-based Bigelow Tea, which, like all our Forbes Small Giants, values greatness over growth, has doubled in revenue since Cindi took over in 2005, now with \$200 million in annual revenue.

"He felt, I'm sure for years, that he was the best one to probably run the company," says Cindi. "Sometimes that generation will be very controlling; it has to be their way. That's a kiss of death."

As Cindi's experience at the company grew, so did the pushback. She proposed a line of holiday-themed teas, but David didn't have any interest in flavors like pumpkin spice or eggnog. Then came a push into natural grocery stores, something her father hadn't considered before. The tense arrangement lasted for years and wasn't sorted out until Cindi had a conversation with her father and mother.

"I explained to him what his actions were doing to me personally. And once he heard that, everything melted away," she said. "It became about doing the right thing for the family, but it did take a pretty significant conversation to get to that place."

Bigelow now produces two billion tea bags from its three plants every year, feeding a product line that comprises 150 flavors. It shuns the more industrial "cut-tear-curl" drying practices as well as buying cheap tea like a popular kind used by many competitors, which is officially classified as "dust." While most competitors long ago stopped sourcing from Sri Lanka because of the high costs there, Bigelow still buys from dealers it has worked with for years, purchasing tea leaves only from mountaintop farms, where the flavor is crisper.

Says Richard Enticott, a veteran botanicals broker who works with Bigelow and its competitors: "They're not hard negotiators because they recognize their partners need to be successful. In a lot of negotiations we do, price is everything."

Bigelow is now registered as a benefit corporation in Connecticut, which requires businesses to have a positive impact on workers and the environment. It also received national certification this year as a B Corp thanks to longtime practices like giving bonuses to all plant workers based on annual sales and converting its three plants to renewable energy.

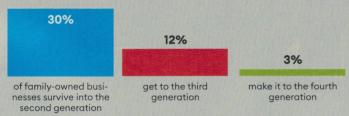
It has also defied an industry consolidation trend, led by Unilever, which has rolled up brands like Lipton, Pure Leaf, Pukka and, most recently, Tazo, which it acquired from Starbucks for \$384 million in 2017. Bigelow, the only independent top-selling tea company left, would likely fetch far more, and PE firms and public companies call at least once a week, Cindi says. So far they've all been rebuffed.

David and his wife, Eunice, both in their 90s, still mix each batch of Constant Comment monthly, working behind the only door in the plant that doesn't have a window, taping over the security cameras before they start mixing. They shared the recipe with their daughter only five years ago. Cindi may have to decide someday when to share it with her two children, both in their 20s, who will inherit the business when she's gone.

"One of the reasons we never sold this company," says David, "was because the first day we sold it, they'd open up a Constant Comment tea bag, count the number of orange peel pieces and go, 'There were 15 pieces of orange peel in it. That's ridiculous. They don't need more than 10." G

RELATIVE FAILURE

There are nearly 5.5 million family-owned businesses in the U.S., but not many of them are especially long in the tooth. Some 88% of family-business owners say they'd like to pass the firm on to Junior or Granddaughter, but companies that try to keep it in the bloodlines over the decades mostly just end up bloodied:



SOURCE: THE FAMILY BUSINESS ALLIANCE

FEBRUARY 2020

Connecting a Million Dots

EquBot is on a quest to prove that computers can outsmart human stock pickers.

BY WILLIAM BALDWIN

PHOTOGRAPH BY TIM PANNELL FOR FORBES



Chida Khatua at EquBot's San Francisco office. Maybe computers are chauvinistic: His software made a timely recommendation to buy shares of Zendesk, a software developer located nearby.

A computer can recognize a cat. Can it spot a bargain stock?

Sitting in a business school lecture on hedge funds four years ago, Chidananda Khatua got the inspiration to answer this question. A veteran Intel engineer working on a nights-and-weekends M.B.A. at the University of California in Berkeley, Khatua imagined that something powerful might come out of the ability to blend precise financial data with the fuzzier information to be found in annual reports and news articles.

For most of their history on Wall Street, computers have been strictly quantitative—dividing, say, prices by earnings and ranking the results. But that is destined to change. A dramatic demonstration of silicon's verbal potential came in 2011, when an IBM system called Watson bested two human champions at Jeopardy! To accomplish this feat the computer had to grasp not just numbers but genealogical relationships, time, proximity, causality, taxonomy and a lot of other connections.

Put that kind of artificial intelligence to work and it could do a lot more than win TV game shows. It might function as a physician's assistant, as a recommender of products to

FEBRUARY 2020

THE WORLD'S FASTEST COMPUTER No computer exhibits artificial intelligence unless it can think quickly. Here's a time line of the fastest—the earliest of which would have been smoked by any smartphone-with speeds measured in billions of floating point operations per second. 2018 1964 1985 1996 Hitachi SR2201 iPhone 11 Pro **IBM Summit** CDC 6600 Star-100 Cray 2 IBM Control Data Control Data Cray Hitachi Apple (U.S.) (U.S.) (U.S.) (Japan) (U.S.) (U.S.) 600 GFLOP 149M GFLOP 0.003 GFLOP 0.1 GFLOP 1.9 GFLOP

consumers or as a detector of credit card fraud. Maybe it could manage portfolios.

Khatua, now 44, enlisted two B-school classmates in his venture. Arthur Amador, 35, had spent much of his career at Fidelity Investments advising wealthy families. Christopher Natividad, 37, was a money manager for corporations.

They didn't have any illusions that a computer would have understanding the way humans do. But it could have knowledge. It could glean facts—a mountain of them—and search for patterns and trends in the securities markets. Perhaps it could make up in brute force what it lacked in intuition.

The trio chipped in savings of their own and \$735,000 from angel investors to create EquBot, advisor to exchange-traded funds. IBM, eager to showcase its artificial intelligence offerings, gave the entrepreneurs a \$120,000 credit toward software and hardware bills. Two years ago EquBot opened up AI Powered Equity ETF, with a portfolio updated daily on instruction from computers. In 2018 it added AI Powered International Equity.

Chief Executive Khatua presides over a tiny staff in San Francisco and 17 programmers and statisticians in Bangalore, India. The system swallows 1.3 million texts a day: news, blogs, social media, SEC filings. IBM's Watson system digests the language, picking up facts to feed into a knowledge graph of a million nodes.

Each of those dots to be connected could be a company (one of 15,000), a keyword (like "FDA") or an economic factor (like the price of oil). There are a trillion potential arrows to link them. After trial and error inside a neural network, which mimics the neuronal connections in a brain, the computer weights the few arrows that matter. Thus does the system grope its way toward knowing which ripples in input data are felt a week, a month or a year later, in stock prices.

On a busy day EquBot is doing half a quadrillion calculations. Thank goodness for Nvidia's graphics chips. These slivers of silicon were designed to keep gamers happy by si-

multaneously processing different pieces of a moving image. They turned out to be ideal for the intensely parallel computational streams of neural networks, and they power the computer centers that Amazon rents out to EquBot and other AI researchers.

Last year EquBot's software picked up a buzz around Amarin Corp., an Irish drug company with a prescription-only diet supplement that uses omega-3 fatty acids. The international ETF got in below \$3, well before the regulatory nod that sent the stock to \$15. Another move involved adding Visa to the domestic fund after the system measured ripples leading from announcements of chain-store closings toward higher credit card volume.

The computer has its share of duds. It fell in love with NetApp and New Relic, perhaps reacting to a flurry of excitement in cloud computing. The stocks sank. Not to worry, says Khatua. Neural networks learn from mistakes.

It's too early to say whether EquBot, which manages only \$120 million, will succeed. So far its U.S. fund has lagged behind the S&P 500 by an annualized 3 percentage points, while the international one is running 6 points ahead of its index.

EquBot, which says its funds are the only actively managed ETFs using AI, won't have this turf to itself for long. IBM is selling AI up and down Wall Street. Donna Dillenberger, an IBM scientist in Yorktown Heights, New York, is working on a stock market model with millions of nodes, and she says billion-node systems are around the corner.

An equally large threat comes from those human analysts Khatua is trying to put out of work. They can track drug trials or notice that Amazon doesn't take cash. What EquBot has in its favor is the explosion in digitized data and a comparable growth in chip power. Humans can't keep up with all the connections.

"Ninety percent of the data in existence was created in the past two years," says Art Amador, EquBot's chief operating officer. "In two years that will still be true." •

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- ห้องสมุดพระนครเหนือ

