Bridging Theory and Practice in Venture
We are pleased again this year to bring the Coller Venture Review to our global audience, with renewed appreciation to our contributors and stakeholders around the world. While “innovation” can be a powerful concept, it has become so potentially over-used that one could say it has become nearly meaningless. In this issue then, we have tried to wrest the work to the ground to give it renewed strength and meaning, with examples taken across industries and functional areas. We start off with an interview with Mattel’s CEO Ynon Kreiz: As Kreiz suggests, innovation refers to the transformation of a one-time toy company into an entertainment leader and that part of the metaverse dubbed “Metavertainment.” This transformation takes IP, distribution, and of course planning based in industry and competitive context. However, as Professors Andriole and Barsky point out in their article “Innovation’s Quiet Truth,” such innovation also requires courageous leadership. “Innovation is not a mainstream function,” they remind us. “Regardless of the industry, at its essence, [innovation] challenges orthodoxy, vested interests, misaligned incentives and entrenched workplace power bases.”

From a different and equally powerful perspective on innovation, author, columnist and Visiting Fellow at Chapman’s University’s Smith Institute Virginia Postrel takes us on a deep dive into the world of synthetic biology. The food we eat has historically been enmeshed with our biology, our sociology, and our culture – it has helped define us. Yet, as Virginia describes the change taking place among producers, buyers, and market-makers, “Given a few decades synthetic biology enthusiasts imagine, substances grown with biology will be as much a part of our everyday lives as petroleum-derived products are now.”

Bringing the paint home is Wildtype co-founder Arye Ellenbein, who notes “[Ours] is the cleanest salmon you will ever have in your life. It contains nothing but fish: no parasites, no mercury, no microplastics. Wildtype knows everything about the salmon because it grew the tissue in a vat.”

Innovation also comes of course from more traditional software and hardware, as we are reminded by Fort Robotics Founder Samuel Reeves, whose autonomous control company serves many of the Fortune 100 (Amazon, Robotics, John Deere, Boeing, Ford, Toyota) from its original inception as a demining company. And lest we think the IoT world is limited to new ventures, Abhay Kinra from Denmark’s Maersk summarizes how technology is being implemented in shipping, one of the world’s oldest industries. As Abhay summarizes, “It will create industry-wide standards for data and interfaces, interoperability of smart container solutions, digital improvements in operations to reduce wastage of resources, reduced greenhouse emissions, and documentation related to cybersecurity.”

Across the range and looking forward, we trust our readers and supporters will be encouraged to think increasingly about all the many expressions of innovation: what it takes to see the opportunity, execute against it, and then achieve impact. As always, we thank our Advisory Board for contributing academic articles that give context to the changes we see, steward, and experience around us.

Special thanks this year to Dr. Leslie Broudo, our Managing Editor. We welcome any comments and suggestions from our readers that will help us improve the value of Coller Venture Review to its readership. We also invite our colleagues to download and distribute articles from our website, https://collerventurereview.tau.ac.il.

We trust this Review and the next steps it represents continue to help guide a bright future ahead.

Sincerely,

Moshe Zviran
Academic Director,
Coller Institute of Venture
This edition’s contributors

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   CEO, Startup Nation Policy Institute

3. Tim Young
   Founding General Partner, Eniac Ventures

4. Virginia Postrel
   Visiting Fellow, Smith Institute for Political Economy and Philosophy

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How Does a “Toy Company” Become a Leader in the Metaverse?

Ynon Kreiz
Chairman and CEO, Mattel, Inc.

Natural, Artificial, Ethical? How Synthetic Biology is Overturning Old Categories

Virginia Postrel
Visiting Fellow, Smith Institute for Political Economy and Philosophy, Chapman University

Overview

Our Venture Policy and Management section frames questions at the intersection of new venture creation and policy globally. In this issue, we address the challenges and opportunities of transformative leadership.

In an interview with Mattel’s CEO Ynon Kreiz, we gain a peek into how a once traditional toy company is becoming a leader in the entertainment industry, and the part of the metaverse that has been dubbed “Metavertainment.”

From a different but overlapping vantage point also focused on transformation, Virginia Postrel, a visiting fellow at the Smith Institute for Political Economy and Philosophy at Chapman University in California, helps us consider synthetic biology, and how natural alternatives may one day seem aesthetically and morally repugnant.

Together, these articles combine theory and practice to help us consider change, and how it can be directed, amplified, and eventually lead to something totally different.

Looking forward, future discussions in the Venture Policy and Management section will continue to address expressions of management that are bending seemingly certain trajectories and leading to new expressions of new venture creation globally.

Venture Policy and Management
Industry Transformation, from the Metaverse to Synthetic Biology
How Does a “Toy Company” Become a Leader in the Metaverse?

In this interview developed in partnership with CEO Ed Frank of Axis Innovation, Mattel Chairman & CEO Ynon Kreiz discusses how toys are an important part of the digital economy. In fact, while Mattel may be best known for its toy products such as Barbie dolls and Hot Wheels, Kreiz has a different, innovative vision, one centered on the IP space. Under his leadership, Mattel has begun production on Barbie movies, TV shows, and NFTs. Between 2018–21, adjusted operating income improved by more than $960 million, and Mattel achieved its highest annual growth in decades. But how did Kreiz and his team create this growth – what role did efficient operations and management of the supply chain play in achieving greater success? And more broadly, – how does traditional “play” interact with technology? Kreiz discussed these questions and more in a conversation with Coller Venture Review. An edited version of the interview appears over the following pages.
**CVR —** Speaking of bringing new products to market, there are a lot of new technologies entering the traditional toy space. So we have to ask: do you see this technology as an opportunity or threat?

**Kreiz —** As the owner of incredible brands, we absolutely believe that there is a significant opportunity to grow our digital gaming business to increase brand engagement and create a holistic experience around our franchises. Given the fact that we own the underlying IP, we are looking to engage consumers, wherever they are and in nearly any form they wish.

Of course, we start with the assumption that physical games and physical play are absolutely here to stay. In fact, it’s growing — this part of the toy industry is expected to reach $40 billion next year, and it is expected to continue to grow at over 5% through 2023.

But we also see that kids spend more time on screens. Obviously, children are able to multitask and do several things at the same time. So it’s not a zero-sum game.

We are also learning from the great companies that have come before us. For example, Marvel used to be a comic book publisher. When Disney acquired Marvel, they realized that there was an opportunity to extend the brands that used to be in comic books and leverage them into other domains. The test is history.

We’re not saying we’ll achieve what Marvel did — the brands are different, and every company has its own journey — but we absolutely believe that our brands are so strong that the opportunity is there. We believe that the strength of our franchises combined with our own capabilities put us in a very exciting position.

Finally, we focus on impeccable execution and imagination, coupled with a global platform to achieve results. While the anchor of our core experience is physical play when we launch a new toy, we think about it as franchise management, whether it’s on television, short form, social media, games, or a movie. This is a key part of our strategy — creating a wholesome, complete, immersive experience around our brands. We extend the physical play and make it an immersive experience for the consumer.

**CVR —** It seems challenging to imagine all the ways in which you engage with sense of play, which as you’ve pointed out is relevant to many different fields. Can you explain?

**Kreiz —** Most broadly, play is perhaps the most common language of all. And the language that we speak is

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**Given the fact that we own the underlying IP, we are looking to engage consumers, wherever they are and in nearly any form they wish.**

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**This is a key part of our strategy — how we create a wholesome, complete, immersive experience around our brands. We extend the physical play and make it an immersive experience for the consumer.**

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**Play. Our brands create the initial attraction and emotional connection that consumers look for. More tactically, we can’t just wait in the toy aisle for consumers to come and purchase our product, we need to reach out, engage, and find them, wherever they are, to create a holistic offering that complements a full engagement around our brands.**

Ultimately, it is about quality experiences and the quality product that we create through innovation and creativity. If you do that, right, everything falls into place. This has really guided us so far and is what is driving our incredible momentum, especially this year. Our company now is in growth mode, driven by these core values, centered on creating innovative products and experiences that inspire, entertain and develop children through play. In a nutshell, as I’ve said, we are looking to engage consumers, wherever they are, and in any form that they wish to do it. The opportunity is to reach and engage in and touch consumers in digital as well, but we’re not the first one to do it. What we do is take something that is almost obvious and extend it to new domains.

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**CVR —** Clearly, strong IP property is associated with a privileged positioning and helps to make new inroads easier to achieve. How specifically does the underlying IP help direct Mattel’s growth?

**Kreiz —** Big brands focus on meaningful consumer engagement and those that have a built-in fan base with global awareness with high emotional connection will thrive. This is true for film, television, live events, consumer products, merchandise, digital games, mobile consoles, and so forth. The level of engagement with our product — the things that kids touch, hug, and go to bed with — is a source of inspiration. We believe that that level of connection and engagement can and should be translated to other highly accretive business verticals.
business verticals should be translated to engagement can and we believe that that a source of inspiration. and go to bed with – is engagement with our level of transformative. we are pursuing to be very meaningful and even our franchises, our success is going mobile consoles, and so forth. and merchandise, digital games, live events, consumer products and and of itself. it’s a growing industry, and we can do a lot of things there. But the mandate for our own film group, and it’s a small team, is for them is to make great content and attract the best talent. That talent is in how that team will take our globally overall. Not just for dolls in 2021, but overall, in all age groups and all categories. Following this, we are preparing to release the Barbie movie in theatres globally in July 2023. It is directed by Greta Gerwig, with Margot Robbie playing Barbie. But the real point here is that, in many ways, Barbie is a reflection of Mattel. Barbie today is much more than a doll, and there will be more opportunities for Barbie as well as for our other brands. When you look at Barbie, and its extensions, it is a reflection of how Mattel operates – how we understand and grasp the opportunities we see in front of us, and galvanize energy to drive a diverse portfolio. There are other great projects that we’re developing already as well, we announced six movies in the works and a lot that is happening on the episodic sides, which we call Mattel Television. We know today that when you work in television it no longer means a weekly show – but is really an episodic experience. We’ve recently launched a live action movie, Monster High, that premiered on Nickelodeon with incredible cinematic quality. A second film has been greenlighted. Bottom line, we are seeing and driving a lot of momentum and excitement around the content activities. 

CVR — How would you say this translates into the management and motivation of your team? Kreiz — We are on a journey to create significant value in the toy in the toy aisle, and it’s an exciting industry in and of itself. It’s a growing industry, and we can do a lot of things there. But the opportunity is, in addition to what we do on the toy side, to expand into these other verticals. But the mandate for our own film group, and it’s a small team, is for them is to make great content and attract the best talent. That talent is in how that team will take our global footprint. We really do have a great team, composed of good people, we work strongly together and my main focus is to ensure that our people have the best environment, the best tools, the best capabilities, resources and infrastructure to do a great job. You always have to look around the corner, and expect the unexpected. But as a whole, once you set the goals and the strategy, it’s all about empowering our team to aim towards those goals and focus on execution and getting things done. We have covered a lot, it’s been a long, long journey and we are in a much different place today than we were just a few short years ago and we’re now orienting towards growth. It’s a new phase, and it does take a different approach. But with all the work that we’ve done over the last few years, we are in an excellent position to achieve what we set out to do.

CVR — From your perspective as an IP holder and brand builder, can you share your perspective on NFTs? Kreiz — NFTs are a really exciting situation and shine a light on the type of opportunities we think about. They didn’t exist and suddenly they’re growing fast. We see that the industry will go through different phases and transformations. To actually buy an NFT is not simple today and this process will become a lot smoother and a lot more user-friendly over time. We also expect that some of the hype will eventually rationalize and interest will focus on big brands that have communities around them, with people that share the same passion, values, and aspirations. Regardless, we see the ability to engage with brands in the metaverse and the combination of the physical with the virtual. For Mattel, we own the underlying rights, which gives us the opportunity to participate in both physical and virtual domains, with NFTs a real part of the experience. We’re very excited about this – we were the first toy company out of the gate that launched an NFT product with Hot Wheels last year. The latest partnership with Balmain is another example of how we can play in the NFT space, but also the type of partnerships that we can do, where the appeal that the brand has is way beyond the toy. •
The latest partnership with Balmain is another example not just of how we can play in the NFT space, but also the type of partnerships that we can do, where the appeal that the brand has is way beyond the toy.

third parties. Our company takes itself and our role as a corporate citizen very seriously. This is very important for me personally and it’s very important for the company, and it’s something that we put at the very front of our thinking, every day.

In sustainability the commitment is to achieve 100% recycled recyclable or bio-based plastics material in both products and packaging by 2030 and we are already making real progress towards that goal. Likewise, we made other commitments regarding reduction of greenhouse gas emissions, to using sustainable materials and recycled materials. We are taking steps gradual but significant steps towards those goals to deliver on our commitment, and yes, it is a key part of who we are, what we stand for, and how we operate as a company.

CVR —
Last year, there was over $26 billion invested in Israeli companies. Has Mattel considered investing?

CVR —
We are always interested where there is fertile ground for innovation and new technologies. As for Israel, knowing the country and the people as well as I do, I’m not surprised that there is a lot of talent in every field and every part of the economy. I believe in the continued growth and further opportunities. This is something that we as a company are also interested in exploring. we are looking to collaborate with Israeli startups and Israeli technology companies to accelerate what we do, even as we give those companies access to our platform and resources.

CVR —
Thank you very much. I think for sure you’re inspiring to many people here in Israel, and especially at Tel Aviv University, we’re going to be hearing a lot about what you’ve done and what you’ve achieved. So, I wanted to thank you very much for giving your time.
Draped over a neat mound of rice, the slice of raw salmon glistens. I follow sushi chef Jun Sog’s directions and eat the nigiri in a single large bite. The salmon’s flavor is delicate, not fishy, the texture silky against the grains of the rice. Then the hidden wasabi kicks in, a sharp contrast to the mild fish. I relish the punch while stifling a cough.

Before taking this job, Chef Jun spent three years preparing 14-course offerings at a Michelin-starred San Francisco restaurant. Sophisticated diners paid a couple hundred dollars each for a chef’s choice meal, or omakase, whose inventive dishes featured fish flown in from Tokyo’s Toyosu Market.

The nigiri and salmon rolls he’s making today are just as special, but their extraordinary character is harder to discern. The only hint is the shape of the salmon from which Chef Jun slices his elegant portions. It’s a fat rectangular block with rounded edges, like a Milky Way bar. Fish markets don’t sell salmon that looks like that.

We are at Wildtype, a San Francisco startup that grows sushi-grade salmon from cells. The product I’m sampling descends from cells taken from a small fish more than three years ago. “We haven’t had the need to go back to the animal since that time,” says co-founder Aryé Elfenbein, a cardiologist who earned a Ph.D. by researching how blood vessels form.

Wildtype scientists coaxed the original fish cells into becoming what are known as induced pluripotent stem cells. Like early embryonic cells, these stem cells can grow into any type of tissue, depending on the cues they get from the environment. Using the right nutrient mix and a mesh-like scaffold, Wildtype gets them to become muscle, including the connective tissue that forms salmon’s...
Given a few decades, synthetic biology enthusiasts imagine, substances grown with biology will be as much a part of our everyday lives as petroleum-derived products are now.

We know what unknown flavors, fibers, or construction materials the new biology might yield? Given a few decades, its enthusiasts imagine, substances grown with biology will be as much a part of our everyday lives as petroleum-derived products are now. Pastureland will return to forest, wild salmon will again swarm the streams, and carbon emissions will fall. The world will enjoy ecologically benign abundance.

“We have spent the last century looking at what can we do with chemistry. And at this point, we’re kind of tapped out in what we can do with chemistry,” says Ena Cratsenburg, the chief business officer at Ginkgo Bioworks Inc., an industry pioneer. People still want the chemical products that improve human life, but without the environmental costs. “We think there’s a better way to do it,” she says, “Biology is a better way.”

That approach represents a significant cultural shift.

Distinctive white lines. The resulting salmon has no bones, no skin, no blood and guts—no waste. “We only create what we eat,” says Elfenbein. He grew up in Australia and says his aha moment came on a trip home during his medical residency. He was distressed to see former rainforests converted to raising cattle. “That made me wonder,” he recalls, “Could we eat meat and not eat animals? Can we grow the same thing, just outside of the animal?”

Founded in 2016, Wildtype is one of a host of new companies turning to cutting-edge biological techniques, known collectively as synthetic biology (or synbio), in search of more environmentally friendly, less ethically fraught materials. Some offer alternatives to existing products, such as the popular vegan burgers Impossible Meat introduced in 2016. They get their beefy flavor from heme, the iron-rich molecule in blood. Others, like Wildtype’s salmon or Huue’s indigo dye, provide duplicates of existing substances, created in new ways.

Synthetic biology is a process, not a product. Unlike corn genetically modified to grow faster or repel insects, the DNA tweaks don’t show up in the final product. Impossible Meat gets its heme by giving yeast a soybean gene that makes it produce a heme-rich molecule. It grows the yeast in fermentation vats and separates out the heme.

“What we’re talking about here is a revolution fundamentally changing the way that materials are made,” says Michelle Zhu, the chief executive and co-founder of Huue. She envisions a “future where we eliminate reliance on petroleum and fossil fuels and polluting production processes, instead being able to work in harmony with nature to create nontoxic colors, and other kinds of nontoxic materials.”

“Synbio executives talk like nature lovers and environmental activists. “We are a company that makes meat from plants to turn back the clock on climate change and restore biodiversity,” says Jessica Appelgren, vice president of marketing at Impossible Foods. Dan Widmaier, the co-founder and chief executive of Bolt Threads, says, “We see the world as a four-billion-year-running experiment of inventing materials that are perfectly sustainable and circular.” Bolt’s products include a silk protein to replace silicone elastomers in cosmetics and a leather alternative made from mycelium, the tissue forming the roots of mushrooms.

Collier Venture Review
Since the first Earth Day in 1970, businesses large and small have grown from the conviction that “natural” foods, fibers, cosmetics, and other products are better for people and the planet. It’s an attitude that harkens back to the 18th- and 19th-century Romantics, who rejected industrialism in favor of sublime landscapes and rural nostalgia: What’s given is good; what’s made is suspicious, especially if it’s mass-produced or of recent origin. The natural is safe and pure, authentic and virtuous. The artificial is tainted and deceptive, a dangerous fake.

That view is still culturally potent, with its own intellectual ecosystem of publications and advocacy groups. They want nothing to do with the new biology, however fired with environmental zeal its advocates may be. “Cell-cultured meats are imitation meat or poultry that consumers know,” says Jaydee Hanson, the policy director for the Center for Food Safety. The activist group is lobbying the U.S. government to require that lab-grown meat carry off-labeling of synthetic biology as a form of science that takes the engineering principles that one would apply to other engineering disciplines and applies them to biology. Engineering identifies regularities, establishes repeatable processes, and makes outcomes predictable. Nature, by contrast, is out of control and indifferent to human purposes. Engineering bends nature to human ends. It is a science of the artificial.

Take Brave Robot ice cream from Perfect Day, founded in 2014 by two self-described “struggling new vegans.” Goldberg uses a photo of its booth at a natural foods trade show to illustrate his anti-synbio article. He sees the booth as a misleading abomination. The ice cream is an animal-free dairy product—something that does not exist in nature. (Neither, of course, does ice cream itself.) Brave Robot genetically tweaks microflora so they turn out whey protein. It’s the same substance in cow’s milk but without milk’s impurities it shuns are as much spiritual as physical. But while this notion of cleanliness is powerful to adherents, its appeal is limited.

The new biologists counter with their own purity claims. “This is the cleanest salmon you will ever have in your life,” boasts Wildtype. It contains nothing but fish: no parasites, no mercury, no microplastics. Purists aren’t convinced. One advocate of “clean eating” relentlessly posts links to Goldberg’s warning on the reviews on Brave Robot’s Facebook page. To her, clean eating means eschewing artificial ingredients. Animal-free dairy products are clearly taboo. Like the ancient prohibitions of kashrut, this concept of “clean” draws tribal boundaries, affirms identity, and makes food meaningful. The impurities it shuns are as much spiritual as physical. But while this notion of cleanliness is powerful to adherents, its appeal is limited.

Wildtype can tell the exact amount of omega-3 fatty acids in each portion. Wildtype knows everything about the salmon because it grew the tissue in a vat. And it’s the precisely controlled environment of the cell culture that ensures that the raw salmon is free of dangerous worms. (Wild or farmed sushi-grade fish must be frozen to guarantee that the salmon’s purity comes from the salmon’s carbon footprint to the day it was made. But Wildtype knows everything about the salmon because it grew the tissue in a vat. And it’s the precisely controlled environment of the cell culture that ensures that the raw salmon is free of dangerous worms. (Wild or farmed sushi-grade fish must be frozen to guarantee their own purity claims. “This is the cleanest salmon you will ever have in your life,” boasts Wildtype co-founder Aryé Elfenbein. It contains nothing but fish: no parasites, no mercury, no microplastics. Wildtype knows everything about the salmon because it grew the tissue in a vat.

“Anyou who loves to eat but really cares. They care about animal cruelty or they care about the future of our planet.” If artificial methods make their goals easier and more delightful to achieve, so much the better. The new biology enables ethical living without sacrifice. Bring on the animal-free mint chocolate chip!
For a half century we’ve been telling ourselves a story about technology as a fall from grace, about artifice and the source of human suffering and environmental ruin—even as we consumed more and more of its products. The idealistic scientists and entrepreneurs building the new biology tell a different story, a story of life and renewal.

People didn’t buy artificial ice because they were wowed by the technology, although it did get some gee-whiz press. They bought it because they wanted to be good mothers and dependable butchers. They wanted to live in big cities without eating rotten food. They wanted to go ice skating, eat ice cream, and enjoy cold beer. Artificial ice made everyday life better. And its story made sense. People understood that ice was frozen water and that pure water made pure ice. They didn’t have to understand the stuff about condensing ammonia.

Wildtype hires sushi chefs so its fish makes sense. While it waits for regulatory approval, the company invites guests to see and taste the product the way they would in a restaurant. The familiar ritual sparks curiosity rather than fear. How long does it take to grow, people want to know, and where do the white stripes come from? Could you make the flavor more intense? Once the product is on the market, Wildtype hopes restaurants can tell its story. Most people don’t, after all, make their own sushi.

Over time, growing meat or silk or leather in a vat could make the “natural” alternatives seem aesthetically and morally repugnant. Eating pond ice sounds repulsive nowadays. Who knows what might be in it? And, as uncomfortable as the thought may be, economics and technology can transform ethical expectations and practices. Infanticide dwindled in Europe as condoms spread and living standards rose. The lower the cost of virtue, the more willing people are to embrace it. Most contemporary diners don’t want to give up meat but also don’t want to see exactly where it comes from. By offering kinder alternatives that don’t sacrifice taste or tradition, synthetic biology can change mores. Ideals and stories also matter. By making muscle power less essential, steam engines probably helped along the abolition of slavery. But novels, slave narratives, and Christian lessons of common humanity were essential. For a half century we’ve been telling ourselves a story about technology as a fall from grace, about artifice as the source of human suffering and environmental ruin—even as we consumed more and more of its products. The idealistic scientists and entrepreneurs building the new biology tell a different story, a story of life and renewal. If we cherish nature, they suggest, we’ll embrace artifice. In this story, synthetic biology offers a kinder, safer, more planet-friendly way forward.

In a more affluent world where tolerance for risks has fallen, the predictability of artifice can deliver a sense of security, just as it did around the turn of the 20th century. Americans then began to enjoy “artificial ice.” Instead of blocks cut from frozen lakes and shipped to cities or southern climes, people began to buy ice made from distilled water in factories using ammonia-based refrigeration. At first more expensive than natural ice, factory-made ice nonetheless found a market among customers anxious about impure food and water-borne disease. Both were serious problems in burgeoning industrial cities.

“The demand for artificial ice has been increased by all citizens who are careful to look after the wholesomeness of their food and the general health of their homes,” reported the Fort Wayne, Indiana, newspaper in 1900, noting that “butchers who want no impurities in their ice chests are making a great demand for artificial ice” and “a dutiful mother will have nothing but pure ice for her children.”

Wildtype hires sushi chefs so its fish makes sense. While it waits for regulatory approval, the company invites guests to see and taste the product the way they would in a restaurant. The familiar ritual sparks curiosity rather than fear. How long does it take to grow, people want to know, and where do the white stripes come from? Could you make the flavor more intense? Once the product is on the market, Wildtype hopes restaurants can tell its story. Most people don’t, after all, make their own sushi.

Over time, growing meat or silk or leather in a vat could make the “natural” alternatives seem aesthetically and morally repugnant. Eating pond ice sounds repulsive nowadays. Who knows what might be in it? And, as uncomfortable as the thought may be, economics and technology can transform ethical expectations and practices. Infanticide dwindled in Europe as condoms spread and living standards rose. The lower the cost of virtue, the more willing people are to embrace it. Most contemporary diners don’t want to give up meat but also don’t want to see exactly where it comes from. By offering kinder alternatives that don’t sacrifice taste or tradition, synthetic biology can change mores. Ideals and stories also matter. By making muscle power less essential, steam engines probably helped along the abolition of slavery. But novels, slave narratives, and Christian lessons of common humanity were essential. For a half century we’ve been telling ourselves a story about technology as a fall from grace, about artifice as the source of human suffering and environmental ruin—even as we consumed more and more of its products. The idealistic scientists and entrepreneurs building the new biology tell a different story, a story of life and renewal. If we cherish nature, they suggest, we’ll embrace artifice. In this story, synthetic biology offers a kinder, safer, more planet-friendly way forward.

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Deep Innovation
Innovation from Robotics to New Models of Venture Investing and Data Analytics

Our Deep Innovation section frames questions related to transformation a little below the surface. In this case, we trace the genesis and now impressive success of Fort Robotics, which facilitates autonomous manufacturing for dozens of Fortune 500 companies and leaders in robotics and AI development. In a collaboration between Prof. Justin Levinson of the University of Hawaii and venture investor and GP Tim Young of Eniac Ventures, we are also exposed to a new framework for venture investments. Levinson and Young look thoughtfully at how different investment paradigms have functioned, and how they might be improved within a broader moral framework. This includes new and creative business models aimed at realigning resources in a way that leverages what blockchain has to offer, specifically to help remedy environmental harm and consumer fraud. Finally, we are joined by Neil Hoyne, Google’s Chief Measurement Strategist, who contributes his perspective on the way in to building – and measuring – meaningful and long-term customer relationships. Future versions of this section will continue to bring together varied perspectives on new frameworks and technologies, with the aim of promoting new syntheses and insights.
How “Stopping” Helped Fort Robotics Keep Going — and Growing

Samuel Reeves
CEO, Fort Robotics

The world of automation is changing. Unlike in the past, machines now have sensors that can let them perceive the world. They have brains that let them think about what to do. They now have different types of actuations that let them do different things. And it all happens at a much lower cost – but also at much higher risks. In this article for the Coller Venture Review, Samuel Reeves, CEO of Fort Robotics, describes his journey and challenges as an entrepreneur to capture the opportunities he saw in the robotics market and explains the perfect storm of factors that have transformed smart manufacturing, the emerging risks of these technologies, and how the pandemic impacted the robotics industry.
entrepreneurs are often asked, “What’s the have-to-have part of what you’re offering?” In the case of Fort Robotics, a Philadelphia-based automation company that builds and operates smart machines safely and securely, it happens to be a function known as “the stop feature.” As its name implies, this feature stops the machine functioning at a moment’s notice. How can such a seemingly unsophisticated function be a key differentiator and the “have-to-have” feature of Fort Robotics’ products? As Samuel Reeves, CEO of Fort Robotics explains in this article for Coller Venture Review, the reason is that in large machines, the failure to stop can mean death. The fact that Fort Robotics’ products had the stop feature helped customers recognize their safety. This caused a pattern of widespread acceptance and adoption that propelled Fort Robotics’ sales and revenues.

Why was this innovation so crucial to Reeves and Fort Robotics? As the article explains, Reeves started at age 22 in the landmine clearing business. At a time when human deminers were sued — and occasionally traumatized or even fatal consequences — to clear conflict zones of buried landmines, Reeves used robots to do the job. Rather than in front of the robots to deactivate a mine before it could kill or maim a human, in that context, being able to stop the machine before anyone died was an absolutely required feature. That was the origin of the stop function. It is also the reason it remains a critical part of Fort Robotics products.

Another element that is apparent in the emergence of Fort Robotics is that, in the developer’s words, it demonstrates Samuel Reeves’s extraordinarily persistence as an entrepreneur. Although serendipity undoubtably played a role, his tenacity in bringing the landmine clearing device to market, understanding the importance of the stop feature, finding out that this feature was critical not just to demining equipment but also to machines serving other industries, and using that to drive sales is what helped Fort Robotics leap forward. The company doubled its sales during the pandemic, thanks to Reeves’s intelligence, resilience and creativity. It is understandable how, during the COVID-19 pandemic, companies such as Clorox — that made soaps, wipes and products that kept people safe — grew rapidly. It is less obvious why companies such as Fort Robotics thrived.

In addition to entrepreneurial drive and imagination, this not-wide-anticipated bounce came from an opportunity that the COVID-19 pandemic mobilized. Across the board, large manufacturers were focused on safety, the stop feature resonated with them, and they used this time to bring change onto the production floor. These are some key lessons from the Fort Robotics story, and we use it here as a mini case study to illustrate what the often-academic theories of persistence and resilience mean in entrepreneurial practice. It may sound trite to say it now, but automation is transforming society.

We have heard that for a long time. Industrial robots started production in the 1970s and 1980s. Machines — like, a lot of manufacturing operations — have been automated for a long time. But the thing that we often don’t see is that a machine takes a long time and money to program. Once it has been programmed, it runs for a long time. You don’t want it to change it because it took you so much time and money to program it. That process is applied to a very narrow aspect of production, which is high volume and low variability. That is how automation has worked in the past in industries such as automobiles and electronics.

The upside relative to what has changed today is huge — estimated at around $30 billion market in the U.S. when smart machines hit scale. And nobody owns it yet.

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At Fort Robotics, we have three elements of creation: Creation of the market, creation of the category, and creation of the technology. There’s ambiguity all over there. There’s a lot of risk in ambiguity, but there is also a big reward. We’re not easy to understand. In machine control you’re looking for very high reliability. Imagine the networks that control our aircraft and cars and nuclear plants. These are safety critical control networks. That’s what we need to have to send an emergency stop signal to a machine.

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Dealing with the Three D’s
As a career-long robotics entrepreneur, I’m a true believer in the potential for smart machines to make life better for humans. That is often lost in the discussion about smart machines. Generally, discussion about smart machines tends to focus on their risks. There are also conversations about the potential for labor dislocations, and if smart machines will cause job losses. But there’s not as much focus on the potential for smart machines to help humans live better. In the robotics business we call it the three Ds: the dirty, the dull, and the dangerous. There are a lot of jobs out there in the world that are dull, dirty, and dangerous. The United States has about 4.5 billion injuries in the workplace each year that require some type of medical consultation. This costs employers tens of billions of dollars. That’s just the dangerous part of dull, dirty, and dangerous. Those jobs are not attractive to workers. They are remote, dangerous, and require specialized skills. There are a lot of jobs out there that are remote in the middle of nowhere, and highly effective. We learned enough to see the potential for smart machines to make life better for humans. That’s when I fell in love with the potential for smart machines to create an automated society.

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Fast forward, and we eventually spent quite a bit of time figuring out a safety system that could sit between the machine and the artificial intelligence (AI) that governs the machine’s behavior. Basically, we let the machine know the boundaries it could not cross. Then we created a way of controlling these machines so that somebody didn’t need to be around them all the time. That required a new approach to wireless communications because, if you think about it, if you have a wi-fi network or a private cell network or a Bluetooth node on one of these things, the number of times that our basic communications technologies malfunction is unacceptable for machine control.

Focusing on the Future
If you screen for drive, creativity and raw brain power, you usually can come to a point of getting to know a potential employee’s expectations. You need alignment in expectations. Have an executive coach who always says that you should never have expectations. You should only have agreements and commitments.

In building our team we have emphasized five values. We want all our people to deliver a customer experience worthy of loyalty; own their priorities; accomplish the impossible; think out loud; and build together.

Personally, for me, the transition from doing to leading is an interesting point. That’s only recently happened. A key for me has been the ability to think out loud all the time. I expect my team to think out loud; and build together.

Pursuing Persistence – Surviving a Perfect Storm
Now, we have automation flowing out to every machine, thanks to a perfect storm of forces. It’s not just about programmability. This is not first-generation automation; it is much more intelligent. Machines now have sensors that can let them perceive the world. They now have brains that let them think about what to do. They now have different types of actuators that let them do different things. It all happens at a much lower cost and a compressed timeline. The cost and the time frame have a critical bearing on what happened in mobile phones. In mobile phones, processing and sensors and the inputs to robotics made them cheap and super capable. That was one of the elements of the perfect storm.

Another element of the perfect storm has been that all the components got cheaper. All the technology required in terms of AI and perception got better. And then we had macro-economic factors such as labor shortages in every production environment. Consider industries such as mining or transportation. Every one of those areas has seen labor shortages. Rather than pay high costs for scarce labor, automation is cheaper. Automation is possible.

We are putting these machines that can kill us in the same place with humans, sharing workspaces, and they’re not smart enough all the time to fully perceive the unpredictable world around them.
The world has not yet fully appreciated the implications. Cyber security risks years from now may be a bridge that two can mix the concrete wrong so two. An oil refinery or a power station. They can poison the water in a water world around them and have thinking on their own. Then we are connecting them to the internet. The software is so much better, but it doesn't actually perceive the unpredictable world around them. That's a major safety risk. Then we connect them to the internet, so that adds to the security risk. The security risk is different for this kind of system than it is for a standard company. If a standard company gets breached, it's a data-loss problem. It's usually a financial problem, and it's a customer trust problem. Those are non-physical problems. In contrast, if a manufacturing operation or a physical environment gets breached, you can have major economic risk. It's much harder. It means that a robotics company, starting a smart machine company, or doing a smart machine retrofit to a production environment is something that takes a really long time to do. It takes a lot of money to do. It's just painstaking engineering and manufacturing rollout and installation. That's another thing that we need to address - economic risk - by providing platforms that mean the people have to build less themselves internally. Smart machines are at this interesting point. They have proven their return on investment in enough cases for people to believe that there's going to be huge scale there. We all believe in this industry that it will go from proof of concept to scale within the next few years. But the longer this kind of painstakingly bespoke economic dynamic persists, the harder it will be for these machine companies to reach scale.

We all believe in this industry that it will go from proof of concept to scale within the next few years. But the longer this kind of painstakingly bespoke economic dynamic persists, the harder it will be for these machine companies to reach scale.

It's not a question of whether it will happen. It's a question of when it will happen. But it all has to go together in a coalition. The developers, the users and the investors of the machines need to be making enough progress. Everybody has to benefit along the way for the coalition to stay together. If it takes too long to develop these machines, then I would be worried about seeing an investment winner. You see that right now in the lidar space, for instance. Lidar is this type of sensor that goes on smart machines, especially on cars, it's viewed as a major input to autonomous vehicles. That got substantial investment five years ago. Hundreds of millions, billions of dollars were invested in lidar. Then, these companies built themselves and they tried to get deals with OEMs. People were already working on this. But then the pandemic accelerated a few sectors tremendously, like e-commerce. The e-commerce acceleration has been very well documented. Consider autonomous trucks. I think the pandemic and the supply chain shortages and the supply chain disruptions fed the decoupling of autonomous cars and autonomous trucks. This is because autonomous cars are mainly useful in city centers where there's high density, while autonomous trucks are mainly useful on the highway. These, from a supply perspective, are different levels of difficulty. We can have autonomous trucks for limited routes, autonomous cars in dense urban environments are harder. So, in terms of the pandemic acceleration, we saw a major upturn in anybody doing robotics for e-commerce. That applied to robot arms that were picking up packages and putting them in boxes or unloading crates and putting stuff away. There are a lot of things in a food processing or distribution center that a robot arm can do. All those activities saw an acceleration.

Accelerations also occurred in other industries. Construction was one of them. This industry has been dealing with labor shortages for a long time, and the technologies are a little further away from prime time. You may have wished that you could do autonomous construction because of the pandemic, but it was not possible to push a button and accelerate it as much as it was for warehousing. Also, a lot of those environments were outside. Social distancing was more possible. That kept construction going a little longer than expected. Agriculture is another area where there was already a major labor shortage. Berries were dying on the vine. The world's projection of food needs has been substantially outstripping our current ability to make food. We need automation in order to fill that gap. The macro-long term trends remain the same.
In machine control you're looking for very high reliability. Imagine the networks that control our aircraft and cars and nuclear plants. These are safety critical control networks. That's what we need to have to send an emergency stop signal to a machine.

Many of the technologies are almost there – as in the construction industry – but they are not yet ready for prime time. You cannot simply press a button and turn them on, as we could in e-commerce. Activities like picking a weed or picking a berry are hard to do from a robotics perspective. A lot of companies are still working their way through these challenges. But it’s inevitable. If the pandemic did anything for funding, it will have pulled in the eventual date by which that kind of technology sees the world.

Another area that’s very frothy in robotics and smart machines is turf care. We have seen a major acceleration in autonomous mowing. Those companies are out there, proving ROS and making scale. Again, that was a labor shortage issue before the pandemic, and it has just continued to grow from a smart machine perspective.

Mining was already fairly autonomous before the pandemic. I don’t believe it has changed course. In general, we pulled in the date at which some of these technologies go prime time. We had a few examples of major accelerations. We didn’t know what to expect when the COVID-19 pandemic started. The general thought in startup land when the pandemic hit was, we need to conserve cash.

Nobody is going to invest. Nobody is going to buy. There’s going to be no economic activity. There’s going to be no investing activity. Do layoffs or public-private partnerships, or whatever one needs to do to survive. At Fort Robotics, we doubled our revenues during the pandemic. It was really interesting. We pulled our clients. They told us, nobody’s sitting out the fastest industrial revolution that our people had ever seen. Nobody’s sitting out because there’s a pandemic. The fourth industrial revolution is still happening. While there was some initial thought that the pandemic was going to be disruptive, it was positive from a business perspective, if you leave aside the obvious human cost. Obviously, no one can claim that the pandemic was good. But if you were to leave aside the human cost, it was positive for the smart machine industry because of the acceleration. It took a few months for people to realize that.

Resilience in Facing Future Risks

Which areas will see the greatest risks in the future? I have been thinking a lot about this. I am going through all my verticals, and thinking through the safety, security, and economic risks.

From a safety perspective, the larger the machines, the greater the risks. So far, a lot of the e-commerce robots have been small. A lot of the new industrial robot arms, like the collaborative robots, have also been fairly small. If they hit you, the injury is not very great. But when you start getting into autonomous forklifts, excavators, or tractors, then you have machines that truly are big enough to kill you. We already see those machines automating. We are already starting to sign seven-figure deals to help them be safer. Many companies recognize the risk that is out there.

The machines that are biggest have obviously the greatest safety risk. Both the opportunity and the challenge in this industry from a safety perspective is that these risks are so new, there are no regulations yet to mitigate them. We do not even have well-recognized, well-understood practices that could be written into regulation. We are trying to invent the best practices for dealing with safety for autonomous systems. Once we do that, and the practices get accepted by the industry, which we’re on our way to doing, then these could be written into regulation. But we’re still a few steps away from stability in the appreciation of safety in this kind of world.

You look at something like aerospace, and the Boeing 787 or 737 Max aside. – let’s take that as an exception because it was a bit of an exception – these safety practices are well understood. Car safety practices are well understood. The design principles, the regulation, the oversight principles, the certification principles – they are all very understood. Even in industries like pharmaceuticals and medical devices, these practices are stable and understood.

Smart machines are a space where you have massive change, and the regulations have not yet caught up. The best practices have not yet caught up. That represents a huge risk. If you’re not reading about autonomous excavators killing children in the school yard yet, that is because the industry has not yet scaled to massive numbers of machines without a solid approach to safety.

If the industry scales too fast, without having figured that out, then statistically, you’re going to see a lot more injuries that will halt the progress. That’s a major risk.

In addition to the safety risks we have described above, we should put a coda on the security risk. The security risk applies to every connected machine that has any operation in the physical world. In any operation whatsoever, there’s a way for a smart machine to cause trouble. Any connected device or machine is exposed to cyber attack. The IoT security industry is not nearly as mature as the IT security industry. That should scare everybody a lot, but we should not let fear paralyze us. Progress will depend on how well we overcome the fear.

Samuel Reeves is the CEO of Fort Robotics, an automation company that builds and operates smart machines safely and securely. Prior to joining Fort Robotics, Reeves served as Co-Founder and President of Humanistic Robotics, a technology company that addressed landmine & IED clearance using robots. He received his B.S. in Economics with concentrations in Finance and Management from the Wharton School of the University of Pennsylvania.

About
A Justice-Based Framework For Web3 Venture Investments

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The venture-backed pathway to prosperity has revolutionized industries, generated massive wealth, and created countless opportunities for global talent to thrive. But despite their seemingly unrivaled role in fueling positive world changes, venture investments have yet to capitalize fully on a tremendous opportunity to create meaningful social and economic justice. Widening wealth gaps, worsening climate disruption, lack of diversity in leadership, and unethical mega-corporation practices underscore the timeliness of the moment. For a venture industry that has focused so successfully on facilitating innovations of historic proportions, the emergence of ESG and socially responsible investing marks only the beginning of what’s possible.

Today, the Web3 revolution has further heightened the stakes of justice. Proponents of a blockchain-connected world, echoing the optimism of the dot.com-batty evangelists of twenty-five years ago, have claimed that Web3’s transparency and decentralization may indeed lead to a future of reclaiming individual rights and egalitarianism. We share their excitement, and we’re eager to see how decentralized projects might lead to new solutions for seemingly intractable problems and injustices. At the same time, we know that Web3—like innovations before it—is susceptible to many of the same risks that played out with Web1 and Web2, as well as some novel ones. Indeed, the recent collapse of some of the crypto industry’s biggest and most trusted players has only deepened Web3 skepticism, not to mention scrutiny from regulators.

In the long run, we believe that the best Web3 ventures will defy the skeptics and prove the technology’s full potential. But an individual project’s success is far from guaranteed. Without an intentional justice-first approach to innovation by both investors and innovators alike, we fear that a naive optimism around Web3’s structural egalitarianism will unintentionally culminate in...
1. Remedy A Massive Injustice or Unethical Shifting of Value

Even if Web3 is able to maintain its independence from entities that seek to consolidate ownership and strip the blockchain future of its egalitarian hopes, corporate harms perpetuated over the past decades will be insufficiently remedied. It is indeed naïve to think that decades-old harms of corporate fraud, environmental contamination, labor exploitation, and consumer deception will willingly slow down on their own and disappear in the face of more equitable Web3 forces. At best, even with a remarkably strong Web3 that becomes incorruptible, we estimate that trillions of dollars captured over the past decades through unethical or illegal means are being deployed in search of further profits and with little fear of consequences. And while we are steadfastly supportive of innovation leading to significant profit, one must draw a clear moral line when the future is uncertain and fragile.

Thus, real justice in the Web3 era provides an opportunity to strategically (and profitably) confront past wrongs with creative business models aimed at realigning resources equitably in a new kind of effort that leverages all that blockchain has to offer. Remediating environmental harms and consumer fraud stand as clear examples of areas in need of strategic intervention. In both cases, firms causing harm have—and continue to—employ economic analyses that balance expected profits against the (low) risk of being caught, qualified by the often small magnitude of economic loss that detection brings. Unfortunately, public, private, and nonprofit sector efforts at halting such unethical choices have failed, raising the question of whether Web3 can provide the tools to respond to such a systemic illness (and, as we discuss, whether such efforts can bring meaningful return on investment).

In our proposed world of venture-backed Web3 justice, then, it is crucial to identify a particular type of injustice that not only is large enough to create a material return on investment when addressed properly, but also one that does so without eviscerating meaningful economic justice to any and all victims. Thus, not all justice-driven Web3 forays become a worthwhile venture-supported light.

We propose that new firms must find the perfect balance when selecting a powerful injustice to remedy, and do so in a way that meets the needed financial elements of three parties: the venture investor, a justice-focused audience, and the victims themselves.

To ensure that each such endeavor surpasses the required minimum standards, we propose confirming:

- Does the justice-backed monetization model indicate a fundamentally sustainable enterprise? For example, is there enough cash flow to allow the entity to continue pursuing social justice post-investment?

- Second, will the new venture deliver a reasonable return to investors and justify the investment? If not, the venture will be unable to meet its mandate and the venture should consider alternate funding sources.

- And third, and perhaps most importantly, will the justice-focused business model result in a meaningful shift in resources and provide victims-centered redress for those harmed?

At their core, these questions essentialize a type of market-sizing analysis conducted at most venture-backed companies. But we suggest that the market sizing of justice should not only follow both the traditional bottom-up and top-down best practices, but also that it must incorporate an additional element: how much justice will it justify the investment? If not, the venture will be unable to meet its mandate and the venture should consider alternate funding sources.

As each of us make our way through our professional lives, only a limited number of justice-aligned professionals make the choice to pursue justice as a full-time career. Those who do tend to gravitate to the nonprofit sector or the foundation world. Stories of intrinsically motivated professionals turning into corporate worker bees, never to turn back, are easy to find. The private sector is indeed packed with righteous talent who often simply cannot afford to pursue their justice interests.

2. Leveraging the Idle Capacity of Motivated, Part-Time, Distributed Experts

The typical approach to leadership in the entrepreneurship literature would perhaps never embrace a quick turn to non-founding, non-employee, part-time outsiders to make the most tangible impacts on a start-up. And of course, we concur with the notion that a founding team’s entrepreneurial passion is a meaningful predictor of success. But in the Web3 justice context, we are necessarily talking about leveraging a different kind of leadership model than the kind that can be generated by focusing on a core team alone: we are talking about talented global contributors with existing careers and expertise who become the passionate, dedicated, and impactful justice army.

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The exhausted corporate attorney, the lonely auditor, the organizationally constrained big-pharma scientist, or the job-insecure journalist all stand the chance to be invigorated by a justice-driven web3 world. But how? This is where Decentralized Autonomous Organizations (DAOs) come in. Designed to leverage “on-chain” relationships, meaningful contributor participation and governance, as well as token-based compensation, these frameworks have the potential to be a game-changer not just for reorganizing a range of traditional organizations, but particularly for justice-based efforts.

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Built strategically, these outside, part-time, expertized teams will provide potentially unlimited scalability for the best organized justice-driven agendas.

These contributors can and will likely fit multiple prongs of the following profile: They will (1) care deeply about the justice-based issue being addressed by the company, (2) have an expertise that gives them a particular skill set that can be leveraged, (3) have gainful employment that they are not necessarily looking to leave for the startup or non-profit world, and (4) seek fulfillment and community that are not being fully satisfied by their current career. Alerted to the potential of part-time, fairly compensated, cutting-edge justice work on an issue they care about, these people will readily join the effort. Built strategically, these outside, part-time, expertized teams will provide potentially unlimited scalability for the best organized justice-driven agendas. Imagine chemists, surveyors, radiologists, accountants, lawyers, and more, lending their talents. Combined with the existing experts in building Web3, DAO members will serve to connect Web3 companies with justice that can and must occur off the blockchain.

Consider, for example, a new venture that seeks to reverse the course of toxic forever chemicals through strategic efforts. The new entity can leverage a partially decentralized DAO structure to enlist relevant subject matter experts including: chemical engineers, surveyors, satellite experts, chemists, water and soil sample gatherers, forensic scientists, nurses and medical technicians, and on and on. Although there will be a visionary and centralized leadership team at the company level driving the overall effort, thus situating the DAO in the category of a partially or progressively decentralized DAO, the DAO team will be a partially autonomous group responding to every need, fulfilling key tasks, voting and governing as needed, and adjusting on the fly to accomplish tasks.

With the idea validated and tested, and a scalable and partially-decentralized team ready to go, it may seem that this justice-focused company is ready to launch. Yet, there is a huge David versus Goliath problem: without some structural help, David probably cannot win a battle over unethically allocated resources.
Depending on the domain in which the justice-based work is centered, being able to rely on a shared set of rules, expectations, or laws can serve as an adjudicatory function, a way to enforce resolution of an inequality, with teeth. It can also provide access to a leadership or governing structure to ensure that a just redistribution of wealth occurs once an injustice is revealed and detailed. For example, the legal system can serve as an anchor for all justice efforts that wish to tap into the civil litigation system to hold entities accountable for harmful practices. Our forever chemical example above is relevant here, in that one important result of that work would be high-impact strategic litigation. A battle between a startup and a massive defendant certainly doesn’t guarantee a win within the legal system, but nonetheless law’s rules and fairness-driven norms can anchor such strategic efforts while providing the potential of meaningful recovery for true victims.

Outside of the legal system, other accountability systems can provide meaningful anchors for new ventures. Treaties, the United Nations, international laws, arbiterative bodies (domestic and global), village or local councils, private entities like the World Bank with their own enforcement powers, nationally adopted auditing and accounting rules and procedures, and even ESG rules and organized consumer-driven pushback are all possible venues that can serve to amplify the impact of David v. Goliath battles.

Conclusion

With these tools at hand, ventures need not rest their hopes of transformational change on Web3’s decentralization and on-chain transparency alone. Rather, leveraging an impactful resource-shifting mission with a business model, a strong decentralized team of experts, along with adjudicatory leverage, Web3 ventures can begin to unwind decades of injustice, while providing meaningful return to investors. Without these elements, Web3 may simply end up providing just a new set of rerouted pathways that reward centralized power-brokers at the expense of talent.

Recent economic lessons, including the swift realignment of early-stage venture money, underscore the importance of following this model. Venture funds pumped the brakes on investment pipelines, switching their focus from dealmaking to slowing portfolio companies’ cash burn. DAO innovators began complaining about untenable structures and disenfranchised contributors, all while the expected economic independence of crypto began to falter as Bitcoin, Ethereum, and others seemed to fall, rise, and fall again with equity markets. Echoing our concerns, the talk of Web3 as a global justice conduit began to fade away, replaced by conversations that mimicked more traditional economic and investment discourse.

Though instability remains as we look forward toward the future of venture creation, as the dust of the latest realigning of the crypto industry begins to settle, a new horizon is emerging, one in which the promises of wealth, power-sharing, and even justice remain, but are situated within a risky environment that requires greater intentionality and precision to actualize on all three elements of the crypto triple threat. This Article has amplified the importance of, and opportunities around, maintaining a meaningful and lasting justice focus in the Web3 world, and proposed that investors and founders can follow a thoughtful, focused approach that can begin to make true justice-based impact, globally.
Many books about digital marketing are short-term and transaction-focused. They look for immediate ROI. In his book *Converted: The Data-Driven Way to Win Customers’ Hearts*, Neil Hoyne argues that such short-term thinking is wrong. Hoyne has written it in his personal capacity; as such, it reflects his own opinions and independent research. He advocates building long-term relationships with customers. “Long-term thinking is not only a better and more successful way to approach customer relationships, it’s also more profitable, and the data supports it,” Hoyne says. A shorter version of this conversation was published in May in AI Business. What appears below is a more comprehensive version of Hoyne’s conversation with the *Coller Venture Review*. 

Neil Hoyne
Chief Measurement Strategist Officer &
Global Head of Customer Analytics, Google
Short-term thinking is wrong, instead, you want to build relationships with your customers. Long-term thinking is not only a better and more successful way to approach customer relationships, it’s also more profitable, and the data supports it.
Within large organizations, the general understanding is that they have more data, more capabilities, more systems, larger marketing budgets. But what we miss is that they also have large, overwhelming bureaucracies where prioritizing a question, getting alignment and action on that question is often difficult.

Smaller, more entrepreneurial startups, well they’re smaller, they’re more nimble, everyone is kind of aligned — plus they don’t have those strict bureaucratic silos. But they all have that same objective, which means we need to succeed and grow as a company, otherwise somebody is going to be pulling the plug.

What both recognize is that it’s all about the data, which is how you want to apply that data that allows you to compete. Now, are there any experiments that I can try? What I generally advise is for companies to try calculating lifetime value. For a small, medium sized business it’s not to say “I don’t have enough data.” Maybe your several thousand customers are plenty. Your two years of data is just fine. For mobile gaming it can be as little as a month’s worth of data. However, there are some thousand customers are plenty. Your two years of data is just fine. For mobile gaming it can be as little as a month’s worth of data. However, there are some thousand customers are plenty. Your two years of data is just fine. For mobile gaming it can be as little as a month’s worth of data. However, there are some
CVR —
What can brands do to establish relationships of trust with their consumers and increase their comfort level in sharing their data? What questions should they be asking to identify their most profitable customers?

Hoyne —
So let’s work with the first part of this question. Establishing trust with customers is an important part of collecting any type of data, and generally what comes out of it are three things. First, consumers are looking for transparency, e.g., “what are you doing with my data, what are you capturing? They are also looking for control, e.g., “can I remove my consent to that data, limit, or correct the data you’ve collected?” And finally, they want to understand the value, e.g., “how is the information that I’ve given you going to somehow benefit me?”

Or are you simply going to use data to know which customers you can change more for, or follow me around the internet with ads?”

That’s a framework that a lot of companies fail to realize. They think it’s simply messages on trust, or on privacy, and it’s just a little bit more nuanced than that. In fact, some research has this question. Establishing trust with your customers should be asking to identify their most profitable customers.

Hoyne —
Well, I would hope for entrepreneurs, much like marketers, that they take away a sense of confidence that these techniques can be a part of their portfolio, even with their current capabilities, even with their current set of data. And that they start to recognize unique advantages that they have in developing their team and developing their processes. A lot of the third section of the book, self-improvement, talks about incremental change, experimentation, and making sure that you can actually act on the data. And my hope would be that entrepreneurs who read this early on will embed that as part of their culture and their processes, because they’ll certainly have an easier time than a large company that’s trying to change theirs.

Now, for the venture capitalists and the private equity investors, this would be related to how you really judge the performance and the effectiveness of the businesses that you’re investing in. Who are your most valuable customers? Who are your least valuable customers? There is also this emerging area where instead of looking at the individual customers, we take all the customers of the business, all of their lifetime values collectively, and add them up. We get a number called customer equity, which is how much your entire customer base is worth. This is the most valuable asset of your business — and we’re able to put a value on it to say “this is how much they’re going to spend.” It allows you to better understand the valuation of the firm. Directionally it allows them to measure the full impact of what the teams are doing instead of just looking at arbitrary short term metrics.

CVR —
What are the main takeaways of the book for entrepreneurs, venture capitalists, and private equity investors?

Hoyne —
Well, I would hope for entrepreneurs, much like marketers, that they take away a sense of confidence that these techniques can be a part of their portfolio, even with their current capabilities, even with their current set of data. And that they start to recognize unique advantages that they have in developing their team and developing their processes. A lot of the third section of the book, self-improvement, talks about incremental change, experimentation, and making sure that you can actually act on the data. And my hope would be that entrepreneurs who read this early on will embed that as part of their culture and their processes, because they’ll certainly have an easier time than a large company that’s trying to change theirs.

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CVR —
If the CEOs of brands in the U.S., Europe, or Asia were to ask you where they should start to apply the lessons of your book and make smarter use of AI and analytics to build customer lifetime value, what would I recommend they do?

Hoyne —
Well, step number one is just to acknowledge that you probably don’t need to buy more big data systems. You have all the data you have. Step two is to calculate lifetime value. The techniques are already available and proven, and you likely have data scientists already that can perfect the models if there are weaknesses. The third step though is actually making sure the right metric is front and center alongside all of your existing KPIs and metrics. And simply having that understanding, having that metric, even if you’re not incentivizing people on it, even if you don’t have a specific plan of action, encourages people to talk, to discuss, to understand and how they change course. And then it comes full circle where the company starts seeking out more information.

CVR —
What new areas of research are you working on these days to build upon the foundation of the book?

Hoyne —
Well, there’s a lot of different things in the book that I’m curious about. The application has infinite variations to go into — what are new techniques for acquiring customers, developing customers, retaining customers? And all of those are fascinating paths that could be their own guidebooks in themselves.

I am incredibly curious about how companies develop these assets and these people. I said early on that one of the things that I don’t expect companies to do is invest more in software, because I don’t think that’s a solution. I think the solution is to invest more in people. But it’s not simply hiring, it’s being able to train and develop, and to understand, or even create, those incentives, those processes, how you build those functional teams. I think that’s the next area of data science, because everything else by comparison is limited.■
Virtual Roundtable
How Does a Nation of Startups Become a Nation of Scaleups?

Overview

Our Virtual Roundtable brings together global leaders and thinkers from Israel on the nation’s growth from startup to scaleup.

In this discussion, we are joined by economists Uri Gabai and Eugene Kandel of the Startup Nation Policy Institute, who invite us to reflect on their views on education, inclusivity, bureaucracy, and the benefits of centralization.

Each of these individuals’ perspectives, responding to what is both specific and general in the changing economic and social context, helps us to consider the profound ways in which the theory and practice of new venture creation are informing one another. Looking forward, future discussions in the Roundtable section will continue to bring together partners and collaborators active in forging our new venture ecosystem.
In this article with leading economists of the Startup Nation, we discuss the challenge of scaling from startups to scaleups. One thing is clear – whether it is increasing population-level benefits, helping to make government as adaptive as the startups themselves, or helping to ensure growth in the access to middle management, more centralization – perhaps even a National Innovation Council – seems likely to help with setting the agenda for continued growth.
**Coller Venture Review** — Thank you gentlemen for your time today. As trained economists, public policy leaders, and leaders of Startup Nation Policy Institute, you are clearly thinking across a broad range of topics and opportunities when it comes to innovation. Can we begin by your helping us to understand your mission please?

**Eugene Kandel** — Our mission is about helping the Israeli government to be more proactive in the competition for ecosystems around the world – that is, government-to-government competition, rather than firm-to-firm competition. And we know that competition requires the government to be strategic, thinking long-term and having a coherent, coordinated policy. In general, governments in democratic regimes are pretty bad at strategy. Thus our goal is to help the government think in the context of a decade rather than for tomorrow morning. In doing so the government must first ensure that the Israeli tech ecosystem is in a leadership position worldwide for ten years from now. Moreover, it must take steps to maximize the tangible benefits that the Israeli tech ecosystem provides to the average Israeli citizen in terms employment, investment, use of technology, and philanthropy. These benefits must become much more pronounced than they are today. Most of the work that we do is focused designing coordinated government policies that advance these two goals.

**CVR** — In reading about the potential transition from “Start-Up Nation” to “Scale-Up Nation,” where the tech ecosystem is presumably more fully integrated into everyday life, I’ve understood that some consider the challenge to be about a lack of middle management. Can you comment on this point of view?

**Kandel** — I think that there is a perceived shortage of middle management for the simple reason that Israel has very few large corporates, and therefore relatively fewer trained corporate managers. However, I believe that there is no lack of ability among Israeli companies to scale. In the past, some people believed that Israel is only capable of building and selling startups, rather than growing companies. I am happy that this narrative has changed, and today selling a startup for $800 million is no longer considered to be a grand achievement. A different narrative, however, emerged, that in order to grow, you have to be near your clients or near your investors, which that in many cases causes Israeli companies to move most of their business activities abroad for growth stage. So it’s really less having to do with middle management, and much more having to do with assumptions about how to achieve long-term sustainable growth. I would also add that there is in fact plenty of middle management available in Europe and the U.S., which one can hire and relocate – and many do. I do believe we have some shortage of experienced product managers. But then again, this is being solved, either by people rising to the challenge and moving across companies as they grow, and/or bringing in outside expertise. So bottom line, I don’t think that the management issue, especially middle management issue is one of our top challenges.

**CVR** — Thank you for a helpful lead-in! So, what would you gentlemen say are the top challenges ahead, when we think about extending the benefits and opportunities of an innovation-driven economy?

**Eugene** — In fact, what would you gentlemen say are the top challenges ahead, when we think about extending the benefits and opportunities of an innovation-driven economy?

**Uri Gabai** — First, I’m expanding on what Eugene said – I think you have to look at this as an evolutionary process. You start from the very early stages of the state of Israel. You know, it was an economy that was decidedly not high tech, but it had lots of ideas - drip irrigation is a good example. The next stage was taking these (early) ideas and turning them into startups. That happened in the late 1980s and 1990s. And then you get the next stage – the ability to develop the product, not just have the technology.

And now, finally, the fourth stage – not just commercializing the product - but building a company with multiple products. And every time you advance to the next stage, you lack either financial components or human capital components. And you have to fill them, as Eugene said, by either buying them or importing them. In my view, that’s one of the advantages of a small economy. We have to remember, you will always have some elements missing in the growth of a very innovative ecosystem.

**CVR** — Can you help our readers understand how these broad objectives are translated into action? How would you say you break the vision down into discrete priorities?

**Gabai** — I think the first priority or the first objective must be making this journey. Going further, and I think Eugene talks a lot about this, is the importance of fighting complacency. It is our worst enemy. Japan was masterful in technology in the 1970s and 1980s, and we know they lost their ascendency. And if it can happen in Japan – a technological giant and an economic giant – it can happen to Israel. If we go to sleep for five years, does it mean we miss the next stage? How do we think about pushing forward, towards the next innovation wave? What am I looking at practically? Well, to start, I am looking at artificial intelligence [AI].

I think AI took a leap in 2013. It started in the 90s and 40s, probably before from a computer science point of view, but AI and big data really became an economic engine relatively recently. And when I think about this, I am mindful of that fact that China is also working on AI, and that their big data capabilities rely on a population of 1.3 billion people, multiple times Israel’s population. So while I look at Israeli companies that are amongst the AI giants, and I think about a position of excellence, I say “Ok, we have to compete harder.” And this takes planning, a point we keep returning to. Israel’s innovation-related success today, it should be pointed out, started in 1973 and were reddoubled in 1985 – the policies started years ahead of other nations, we had a head start. And this is a critical part of our nation strategy, and our national imperative.

To be clear, everybody understands that there is a global innovation race. No one is winning based on cheap labor anymore. So the competition is a lot fiercer, there are fewer arbitrage opportunities. It’s also worth noting that it’s no longer about national comparative advantage but about absolute advantage. Can we lose in this race? Yes, we can. But we don’t have to. We just have to continue pushing above our weight.

**CVR** — What do you imagine is needed in order to do that, to continue as you said “punch above your weight”?

**Kandel** — Many of our companies compete quite well. But the government as a system does not compete well at all. For example, academia is set up structurally in such a way that it cannot compete for the top talent. The only way for Israel to win is by attracting the very top people in the world, or at least the top Israelis and Jews. Just to give you an example, Johns Hopkins University has a research budget of $3.5 billion/year. By contrast, the entire Israeli ecosystem research budget is $6 billion. In Israel, you have nine universities and 20 colleges, this budget has to be shared. How do you compete with somebody who can spend multiple times more than you can? Ultimately, you have to have a really strong advantage and which are critical for you. If you don’t do that, and allow the system to spread thinly, you risk achieving very little.  

“And so that’s our goal – to help the government think in the context of a decade rather than tomorrow morning”
So, to paraphrase – it’s really about bringing discipline and focus in order to play some smart bets?

Yes, exactly, and it’s in every area, whether it’s in training people, retaining the best companies, retaining the best people in academia and industry. There must be a coordinated effort that says, “We can’t afford to lose this ecosystem. And if we don’t compete head to head, we’re going to lose.” Just as you know, the firm loses market share if it stops competing. Let us remember, Nokia in 2009 was the largest producers of cell phones in the world. And in 2013 it quit that business, since it was thrown out of the market after just three years, as it didn’t look sufficiently strategically into the future. Israel cannot afford such experience.

Back to the retention of talent, I will just point out that Israelis now make up 25% of the science-related faculties of the top 40 universities in the U.S. We need the top academic talent to come back, and we need it to stay. It’s really about the balancing act of a rapidly growing and innovative ecosystem that Uri referred to earlier.

How do you imagine a coordinated policy would address this challenge, and others like it?

The important part is not to find the very best answer, but not to end up with the wrong answer. To start, the biggest challenge is clearly that there is no cross-governmental forum with a mandate to get together and develop a common language, an agreed identification of challenges and opportunities, and then figure out a coordinated set of policies. This would also include identifying the tools that need to be developed and the amounts that need to be invested, as well as the type of regulations and laws that would need to be changed. Unless coming from the very top, I would say that such a forum is almost structurally impossible. So basically, we never optimize globally for the entire system – each office, each company optimizes within the constraints.

I totally agree. Now in the Office of the Chief Scientist, you have probably one of the most successful government organizations specifically in fostering innovation and R&D in history. But at some point, the challenge is to address the bigger puzzle. It’s not just about R&D, it’s a much broader challenge. So I see things slightly different than Eugene. I don’t think it’s just coordination. I think there should be an entity in government – a National Innovation Council let’s call it – that is in charge of innovation policies, that synchronizes from blockchain regulation to financial services to security (as an example).

How do you imagine this would affect the broader public?

Yes, that is the next challenge, getting more people and more diverse populations into innovation. You have to make the incentives right for the companies. And it’s something that is not easy. But again it takes planning, and someone has to look at these challenges 10 years from now, and not as something for the next three months. You almost need a map of the world 10 years out, in order to figure out where to play, you really have to have a firm vision of where the world is going to go. And you really have to manage towards that future vision in order to draw out for people.

Someone in government has to look and say, “Well, these are the emerging technologies. Can I be a contender”? “Do I have the human capital to do this”? “What type of regulation will be required”? •

I do believe we have some shortage of experienced product managers. But then again, this is being solved, either by people rising to the challenge and moving across companies as they grow, and/or bringing in outside expertise.
For example, a lot of startups cannot grow here if they have anything to do with Bitcoin or any other virtual currency, they can’t open a bank account. So that basically drives them to Cyprus or somewhere else, which doesn’t make sense to us at all. But that, unfortunately, is one of these expressions of lack of coordination and cooperation in overall policy.

CVR — How does the bubble in valuations potentially affect the move to more scaleups?

Kandel — Yes, there was a bubble in valuation. But I’m less worried about the big guys, I’m more worried about the small firms who are having tough time raising capital. Israel is generating fewer and fewer start-ups for the last 6 years now. So, if there is a certain convergence rate of start-ups that culminate in a unicorn, then fewer start-ups imply fewer unicorns in the future. These challenges are not getting enough attention from a policy perspective, specifically as it relates to regulation. For example, a start-up that is somehow involved with Bitcoin or another currency, finds it almost impossible to open a bank account, which drives them to Cyprus or elsewhere, which doesn’t make sense to us at all. This is an unfortunate expression of lack of coordination and cooperation in overall policy.

CVR — Where would you start, what first step would you take towards this more coordinated effort to support the growth of startups into scaleups?

Kandel — The policy is not usually one big thing, as there is never a silver bullet. Instead, there’s a series of things that together generate an environment in which something happens. It’s very rare to create one large legislation or one large policy or regulatory change that would suddenly change everything. Thus we argue for the creation of some forum with a mandate and long-term view.

CVR — Innovation policy is a serious business. Clearly it has to be driven by data. What are some of the challenges?

Gabai — Once you take money from the government, then all of a sudden, one has to think twice about any advice being – same thing goes for Google or Facebook. But the goal is basically to build better foundations and give solid policy advice. Contextually, I think that the culture of science and knowledge and innovation was here from the get go. So, in that sense, I think that, we’re part of a journey. And now there are new challenges ahead of us. You can’t win with economies of scale. A small country like Israel can only win based on ideas. And what’s high tech? High tech is basically taking these ideas and turning them into a product. That’s the only way that we can win. And in that sense, you know, I’d like to think we are still in the very beginning part of the journey, on a continuum of growth we will manage.

CVR — I’m not there to win, I’m there to create ideas and solutions to problems that, in my opinion, are being neglected. For me, I might have done things that had a higher probability of success, but I didn’t. I did things because I thought they were important. You always have to look at the bigger picture, the bigger story.

About

Uri Gabai is CEO of the Start-Up Nation Policy Institute. He was previously Chief Strategy Officer for the Israel Innovation Authority, where he headed the strategy and economics divisions. Gabai also previously headed the economic unit at Israel’s Office of the Chief Scientist.

Eugene Kandel is Co-Chairman of the Start-Up Nation Policy Institute and former CEO of Start-up Nation Central. He is also an Emil Spyer Professor of Economics and Finance at the Hebrew University of Jerusalem, with a joint appointment at the Department of Economics and the Business School. His areas of expertise are Financial Markets and Institutions, as well as Corporate Governance. His work has been published in leading Economics, Finance and Accounting journals.
Overview

Our Trends in Venture section addresses big picture changes when it comes to new venture creation, brought about both by technology and human leadership.

In an article from Abhay Kinra of Maersk, we learn how IoT is being introduced into the supply chain. From the academy, MIT’s Daron Acemoglu summarizes the year of the “supply chain mess.” And from Villanova University, Stephen J. Andriole and Noah P. Barsky help us consider the challenges of bringing innovation forth.

Together, these contributors help us consider new opportunities at an industry and enterprise level. Looking forward, future discussions in the Trends in Venture section will continue to link models of change across time, including the implementation of innovation based in technology and human practice.
Today, there are many examples confirming that the shipping industry not only moves goods but creates competitive value for its customers through constant innovation of products and services. In fact, shipping companies have moved from a traditional ocean carriage to multimodal product offerings which also include a range of fulfillment services such as cold storage, packaging, and custom clearances – slowly capturing the entire end-to-end (E2E) value chain. The industry touches everything from moving bananas from Central America to the supermarkets in Europe – our clothes from Bangladesh to America, our COVID medicines from India to Africa, even to moving expensive yachts from China to France. Most companies in the Transport and Logistics sector (T&L) therefore compete at different legs of the transport and fulfillment services, and at several critical junctures in the market – at the nexus between transportation products and integrated solution offerings. For the A.P. Moller group in particular, the goal to become a global integrator of products and services is relevant for both long-term strategic customers and for the short-term market.

A.P. Moller Mærsk is part of a larger A.P. Moller group which also includes Danske Bank and Mærsk Tankers. The Mærsk name – synonymous with ocean shipping for decades – is a market leader in capacity and service offerings within the ocean space. At end of year 2022, the company’s market capitalization was $265 Billion. Mærsk’s strategy has been to build upon this foundation and offer integrated solutions for smooth and optimised cargo flows across all steps of the supply chain. In a nutshell, the company seeks to create value for customers in the form of better supply chain outcomes, increased transparency and control, and ultimately lower end-to-end costs. Notably, this “Transformation” or “Integrator” strategy is unique in that it seeks to creates customers and financial synergies between ocean, landside, and air logistics. This in turn is meant to create physical assets connected to new digital platforms, an imperative powered by M&A in recent years and made feasible by steady cash flow, reported at $16 Billion in 2021, up from $4.6 Billion in 2020.

The transformation towards becoming an integrated transport and logistics company was launched in 2016. This so-called “integrator strategy” has included digital transformation, and
accelerated during the pandemic, which clearly upended the global supply chain. Within this volatile supply chain environment, logistics companies including Maersk saw the benefits of Internet of Things (IoT) in mitigating some of the global supply chain challenges, including implementation in maritime setting; warehouse management; improvement in last mile delivery; and predictive analysis. Clearly, the company pivoted around next-gen technologies, big data, and innovation to transform into an end-to-end integrated logistics company. But what does this really mean, for Maersk in particular, for the industry in general, and for supply chains globally at the most macro level? This is not a trivial question: As companies are slowly adopting more IoT devices across their value chain aiming to solve some real supply chain issues which impact customer delivery promises, the real task is to understand how to envision the end state of their ecosystem - essentially understanding where they want to play and how to win. Given that the rate of adoption and implementation has generally been slow given the heavy asset base, it is critical to lay down a clear path for digital adoption, as any wrong turn can set back an organization by several years. Thus, while inertia in the logistics industry has always been a challenge to overcome when it comes to adoption of digital technology, there is a clear digital imperative and a bright future ahead and performance management. In addition, solutions placed in terminals and depots enable data detection related to energy optimization, fault detection, and resolution support data. The role these type of IoT devices play is not limited to short term optimization. In fact, it allows for long term delivery promise enablement and creation of new business opportunities. Their impact can be seen in three critical areas –

- **Sensing and Monitoring**
  Capturing information across various aspects of supply chain, including monitoring environmental impact in the value chain. Naturally the highest concentration of IoT devices can be found here, as it is an area of direct control.

- **Adaptive control**
  Interpreting captured information and decision-making basis analytics, including orchestrating changes to the supply chain based again on environmental changes.

**The Role of IoT to Date**

Services, tools, platform, and strategy are of course rooted in providing the best customer experience possible. This supports customers to focus on developing their core business. In an increasingly complex supply chain environment, this dependency – on a third party for logistics – can only come be successful via use of the digital solutions and harnessing the power of data analytics to support customers with the information they need to run their businesses. Internet of things (IoT) forms an integral part of this digitization journey, connecting as it does assets and cargo, providing actionable information to support delivery promises. Most significantly, the suite of technology that enables IoT also enables new ways to differentiate products and services. Think about the following for example:

- **Fleet-Based IoT**
  The main scope of Fleet based IoT is centered around the container vessels. Fleet based IoT devices capture vessel data to optimize energy efficiency and support de-carbonization, crew safety, fire detection and machinery monitoring.

- **Cargo Monitoring -Based IoT**
  These solutions that provide containers with a ‘voice’ and the ability to inform employees and customers about exact location and status, with equal coverage both on land and at sea. Information is consolidated and made available via online tools to customers as well as to staff. The solution provides proactive information, making it possible to address potential complications in containers that could otherwise impact delivery plan and/or the cargo itself.

- **Vessel and Analytics -Based IoT**
  This includes vessel monitoring for reefer containers. Able to monitor data from 350,000 Maersk Line vessels. Equipment Management Repair vendors

**The IoT of the sea**

Thus, while inertia in the logistics industry has always been a challenge to overcome when it comes to adoption of digital technology, there is a clear digital imperative and a bright future ahead.
Innovative IoT solutions require cross-industry partnerships.... creating industry wide standards for data and interfaces, interoperability of smart container solutions, digital improvements in operations to reduce wastage of resources, reduced greenhouse emissions, and documentation related to cybersecurity.
Maersk also transports around 27% of world's refrigerated containers and 25% of the world's food commodities. Through innovative supply chain products including cold chain solutions lies a wide spectrum of digital tech including IoT devices on refrigerated containers and in warehouses that contribute by providing real time info on condition of food, thereby supporting the organization’s objective of halving food loss that occur during transit. In one recent example, Mærsk participated with Wageningen University and several customers to create a prediction model (a digital twin) to create and trial food quality related to data from container monitoring. Despite these successes, inertia in the logistics industry has always been a challenge to overcome when it comes to adoption of digital technology. There is, however, a digital imperative and a bright future ahead. Despite volatility in global GDP, the extended impact from COVID 19, and rising trade tensions between states, top shipping companies in 2010 formed an association (DCSA- Digital Container Shipping Association) to establish IT standards across the industry. Their purpose - facilitate digital connectivity and seamless data communication that anyone can leverage. This body is focusing on creating industry wide standards for data and interfaces, interoperability of smart container solutions, digital improvements in operations to reduce wastage of resources, reduced greenhouse emissions, and documentation related to cybersecurity. It remains a challenge for Mærsk and other players in the sector to capture the values of integration, connectivity, decarbonization, and growth all together due to global disruptions that continue to undermine service delivery, and the lack of standardization, data, non-supportive policies, and partnerships that dampen the growth much needed to progress on these systemic opportunities. As an industry, we stand at crucial inflection point where decision needs to be made regarding future growth, collaboration, and partnership in the name of integration and sustainability. A continuous stream of investment will be needed to work on these global challenges and uplift the current digital landscape, remove legacy tools and systems, and develop a framework that can not support adoption of the IoT devices. "A continuous stream of investment will be needed to work on these global challenges and uplift the current digital landscape, remove legacy tools and systems, and develop a framework that can not support adoption of the IoT devices."

"example of success, especially compelling given the context, is ‘TradeLens’ which is a cross-industry, cross-entities document sharing platform that speeds up the workflow, brings visibility, and lowers costs, "

"Imagining Innovation and the Digital Future"

IoT devices are not only enabling new business models and creating more revenue opportunities, but also feed into around decarbonization. In the case of Maersk, the company in fact owns approximately eighteen percent of the world’s global fleet, and therefore can contribute significantly towards decarbonization via efficiency management. Under fleet IoT devices, ‘energy efficiency applications’ serve the purpose of monitoring and optimizing the performance of the ships and supporting decarbonization journey. This includes, for example voyage simulator connected to various IoT devices onboard and at shore that provide the most fuel-efficient route for a ship to take in any weather condition.

"example of success, especially compelling given the context, is ‘TradeLens’ which is a cross-industry, cross-entities document sharing platform that speeds up the workflow, brings visibility, and lowers costs, "

"Abhay Kinra is a supply chain logistics professional with over 15 years of experience at Maersk. He draws on a range of previous experiences across multiple trade routes at sea; operations in Asia Pacific, and more recently in global container flow management in Copenhagen. Kinra currently heads asset and cost optimisation, where he brings otherwise conceptual innovations down to customer level. His passion also include bringing innovation to sustainability an industry where small changes can have a huge impact. Kinra earned his MBA from the Copenhagen Business School with a focus on corporate sustainability and governance."

"example of success, especially compelling given the context, is ‘TradeLens’ which is a cross-industry, cross-entities document sharing platform that speeds up the workflow, brings visibility, and lowers costs, "
Recent bottlenecks and price surges have underscored the risks that come with sprawling global supply chains supposedly built around the principle of economic efficiency. But beyond these glaring issues, supply chains impose additional social costs that warrant policymakers’ attention.

Global supply chains used to be the last thing policymakers worried about. The topic was largely the concern of academics, who studied the possible efficiency gains and potential risks associated with this aspect of globalization. Although Japan’s Fukushima nuclear disaster in 2011 had demonstrated how supply-chain disruptions could impact the global economy, few anticipated how central the problem could become.

Not anymore. Today’s supply-chain bottlenecks are creating shortages, propping up inflation, and preoccupying policymakers around the world.

US President Joe Biden’s administration deserves credit for recognizing that supply chains are key to future economic security. In February 2021, Biden issued an executive order directing several federal agencies to secure and strengthen the American supply chain; and in June, the White House published a 100-day review on “Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth.”

This 250-page report contains many important proposals. Some are already part of the broader discussion on improving the US workforce’s skills and the economy’s capacity for innovation. Other ideas have been circulating for a while in international relations and security studies; for example, the document considers the national-security implications of defense and other critical industries’ reliance on imported inputs.

But the review’s most important contribution is its observation that global supply chains have imposed various social costs: “Our private sector and public policy approach to domestic production, which for years prioritized efficiency and low costs over security, sustainability and resilience, has resulted in supply chain risks.”

The review then asks whether hyper-globalized supply chains are so great for economic efficiency after all.
The default position among economists is “yes, they are.” When two firms enter into a transaction in which each will gain something, that is good for both firms and also probably for the rest of the economy, owing to the resulting efficiency improvements and cost reductions. Whether this involves a US manufacturer offshoring the production of some inputs to a Chinese firm is beside the point.

Yet supply chains can pose a danger to an economy in two important ways (beyond the defense-related concerns mentioned above). The more complex a supply chain becomes, the greater the economic risks. A break in any link can affect the whole chain and send prices surging if it creates sudden shortages of a necessary input.

The worst-case scenario is when a failure in one part of the chain triggers domino effects, bringing down other firms and bringing the entire sector to a standstill. Logically, this scenario is similar to what one finds in financial networks, where the failure of one bank can push others into insolvency or even bankruptcy, as happened in 2008 following the collapse of Lehman Brothers.

In principle, because uncertainty is costly, businesses will take these risks into account when deciding to build supply chains. In practice, however, there are good economic reasons why firms may overextend their supply chains. For one thing, firms will account for their own risk, but not for the systemic effects they are creating, nor for the risks they are imposing on other firms or the entire economy.

Moreover, when global competition creates powerful incentives to reduce costs, even small price differences offered by foreign suppliers can become attractive, especially in the short term. In this age of stock-market options and hefty bonuses, financial interests also factor into managers’ considerations. CEOs enjoy immediate compensation when they can achieve cost reductions and increase profits, whereas the significant costs of future uncertainty – or even bankruptcy – will likely be someone else’s problem.

A second way that companies may overextend their supply chain is subtler but no less important. The problem, the White House review notes, is that the United States has taken certain features of global markets – especially the fear that companies and capital will flee to wherever wages, taxes and regulation are lowest – as inevitable.”

This statement echoes economist Dani Rodrik’s prescient observation that globalization is not just about trade in goods and services; it is also about the sharing of rents. As such, the globalization of supply chains is an integral part of the shifting balance between capital and labor.

The most straightforward mechanism for this process is the offshoring of inputs, the mere threat of which can be used by managers to keep wages low. This happens on both ends of the offshoring transaction: US companies can pay less to their employees by expanding their supply chain to countries (such as China or Vietnam) where wages are already lower as a result of lax labor regulations.

A fragmented supply chain may also make it more difficult for workers to organize for collective bargaining, creating yet another benefit for businesses. Companies may even reap tax advantages from globalizing their supply chain, if doing so allows them to book profits in lower-tax jurisdictions. This second reason is problematic for the US economy as well. It suggests that managers will tend to globalize their companies’ supply chains even when doing so is not more efficient, simply because doing so allows them to shift rents away from workers and toward shareholders. Not only does this create an excessively overextended supply chain; it also distorts the income distribution by suppressing wages, especially for low- and middle-skill workers.

The White House report proposes keeping more of the supply chain in the US, especially in manufacturing. But how can this be achieved? A two-pronged approach would be the most effective. First, the need for meaningful inducements for businesses to invest in their domestic supply chains implies that the tax advantages of offshoring inputs should be eliminated, and the opportunities for labor-regulation arbitrage should be curtailed. But other, more fundamental changes are also needed. The global supply-chain mess is an opportunity for the US to have a broader conversation about the economy and what it is for. As long as CEOs remain obsessed with short-term stock-market performance, bolstered by the ideology of “shareholder value,” they will seek ways to shift rents away from their workers, whatever the risks.

**The worst-case scenario is when a failure in one part of the chain triggers domino effects, bringing down other firms and bringing the entire sector to a standstill.**

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*Coller Venture Review*

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**About**

Daron Acemoglu, Professor of Economics at MIT, is co-author (with James A. Robinson) of Why Nations Fail: The Origins of Power, Prosperity and Poverty (Penguin, 2020) and The Narrow Corridor: States, Societies, and the Fate of Liberty (Penguin, 2020).
All ventures must innovate to remain competitive. However, the harsh reality is that most innovation initiatives fail despite massive investments in methodologies, organizational structures and human capital. Substantive innovation requires far more than inspirational quotes about change and irrelevance, aspirational task forces, dedicated funding and other forms of stagecraft. This paper synthesizes research on why innovation falters and how courageous leaders can try to fix it by disassembling its teams, structures and perhaps, over time, its culture.
Innovation Challenges

Innovation is not necessarily a mainstream function. Regardless of the industry, at its essence, it challenges orthodoxy, vested interests, misaligned incentives and entrenched workplace power bases. Not surprisingly, its failure is rooted in widespread human, organizational and workplace culture problems.

People problems include less than perfect innovation leadership capabilities: many executives and program/project managers have little or no innovation experience. Further, the very skills and competencies that advance careers and serve traditional functions well are ill-suited to innovation. Functional experts often struggle when asked to adopt a broad business perspective, foresee market trends and formulate true strategic insights. Even with a clear and compelling vision and mission, execution frequently sputters as many leaders lack the deep process, technical or domain knowledge to innovate. Far worse, others bring “bad politics” that devolve innovation initiatives into battlegrounds for budgets, people and personal visibility.

The second set of problems are organizational. Traditional functional fiefdoms with chiefs, teams and resource constraints seldom achieve even incremental innovation. In response, new ventures fund, join, and publicize flashy labs. Centers of Excellence and corporate venture capital organizations to spur innovation. While increasingly popular; sadly, these efforts fall too short, seldom yielding tangible accomplishments or positive ROI. Their demise is often attributed to rudderless leadership, poor talent fits and more urgent, competing resource requirements.

The last set of problems is anchored in culture. While many companies speak fondly about innovation, they often view it cautiously, at best, or even in some cases, almost resentfully. Innovators in these cultures are sometimes quickly ostracized as they challenge the status quo, further inhibiting others and thwarting change. As we explore here, culture is the diagnostic starting point for addressing innovation’s barriers to lasting, meaningful change. Innovation’s talent, organizational and culture “importance-readiness gaps” afflict organizations, impair strategic agility, hinder competitiveness and drain financial resources. For innovation to thrive, each gap must be addressed with uncommon candor, decisive leadership and credible action.

Innovation Defined

The Merriam-Webster Dictionary defines innovation as “1) the introduction of something new or 2) a new idea, method, or device; a novelty.” Yet, senior leaders are often unclear what they mean by business innovation.

Clayton Christensen (1997), in his seminal book, The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail, distinguishes between two types of innovation: disruptive and sustaining technologies. Disruptive technologies are the “game changers,” while sustaining ones modernize existing products, services and workflows. The latter are incremental, more common, less consequential and, of course, much less risky.

Innovation is not a mainstream function. Regardless of the industry, at its essence, it challenges orthodoxy, vested interests, misaligned incentives and entrenched workplace power bases.

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**Table: Types & Targets of Innovation**

<table>
<thead>
<tr>
<th>Type</th>
<th>Product</th>
<th>Service</th>
<th>Process</th>
<th>Business Model</th>
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<tbody>
<tr>
<td>Disruptive Innovation</td>
<td>Innovation that Disrupts an Existing Product</td>
<td>Innovation that Disrupts an Existing Service</td>
<td>Innovation that Disrupts an Existing Process</td>
<td>Innovation that Disrupts an Existing Model</td>
</tr>
<tr>
<td>Modernization-Based Innovation</td>
<td>Innovation that Renews or Upgrades an Existing Product</td>
<td>Innovation that Renews or Upgrades an Existing Service</td>
<td>Innovation that Renews or Upgrades an Existing Process</td>
<td>Innovation that Renews or Upgrades an Existing Model</td>
</tr>
<tr>
<td>Incremental Innovation</td>
<td>Innovation Designed to Simply Tweak an Existing Product</td>
<td>Innovation Designed to Simply Tweak an Existing Service</td>
<td>Innovation Designed to Simply Tweak an Existing Process</td>
<td>Innovation Designed to Simply Tweak an Existing Model</td>
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For our purposes, we define innovation according to Figure 1. Note that there are three kinds of innovation: incremental, modernization-based and disruptive innovation. Note also that innovation occurs among products, services, business processes and entire business models. Most “innovation” is incremental, Incremental innovation, no matter how it may be sold to stakeholders, is barely innovation at all. Real competitive advantage is created by disruptive innovation, but many companies are far more comfortable pursuing incremental innovation because – as Figure 1 suggests – it is much less risky than disruptive innovation and therefore less likely to consume lots of resources or threaten otherwise ascendant careers.

Innovation Talent

There are no perfect solutions to talent problems. Many people problems are intractable, but there are some steps companies can take to improve their innovation prospects. Perhaps step one is to just look in the mirror.
Barsky and Catanach (2011) advise leaders to elevate the workforce’s business acumen to attempt to break this logjam. Do team members really understand core business processes and their relationship to competitive advantage through innovation? Do team members understand the business “outside in” from the perspective of customers, suppliers, competitors and financiers? Are there incentives to question the status quo, rewards for experimentation and accountability for business improvement? When expensive innovation projects go awry are the innovators in any way “punished” by leadership?

Despite anecdotes to the contrary, there are actually very few professionals with real innovation talent. The most talented ones reside in start-ups – and therein lies the problem for medium-sized or large entities. It’s not a paucity of innovation talent – it’s that many larger organizations cannot recruit and retain the “uncomfortable” talent that would rather be somewhere else. Innovation DNA is mismatched from the outset.

A common solution to this problem is the retraining or upskilling of employees to be more innovative. Upskilling is always challenging and not always appropriate (Freschi, 2020; Martinaitis, Christenko and Amanatidis (2020); Weber, 2021). Weber describes why upskilling is so challenging:

- **Data:** Companies typically don’t have a clear view of their own employees’ talents. Few firms have repositories of data on a person’s skills, internal reputation, learning capacity, ambitions and interests.
- **Speed:** Converting a mechanical engineer into an electrical engineer, or a business analyst into a data scientist doesn’t necessarily happen in one quarter — or even a fiscal year — the cadences that shareholders understand.
- **Money:** Employers have long shown a reluctance to invest the dollars needed to successfully retrain large swaths of staff, even when the economy is strong.

### Unrealistic expectations:

Society needs to recalibrate expectations for worker retraining. Laid-off coal miners probably won’t become data scientists, and few ATR/line workers will morph into software developers as the company transitions from a telephone company to a wireless and services business. The reason why professionals self-select into corporations is precisely because they believe their skills are more suited to corporate life than start-up chaos. Often, all the best big companies can do is to hire or rent innovation talent from the outside. Upskilling is too often ineffective and almost always expensive.

### Innovation Structures

Companies that believe innovation should be a core competency often formalize their efforts in formal organizational structures such as innovation labs, Centers of Excellence and corporate venture capital teams. Sometimes they organize vertically where each major functional area or line of business pursue their own innovation projects. Regardless of whether the approach is centralized or federated, innovation initiatives need budgets, teams, processes and a slate of projects consistent with short-term and longer-term business objectives – none of which are easy to procure.

Gryszkiewicz, Toivonen and Lykourentzou (2016) define innovation labs according to their features:

1. Imposed but open-ended innovation themes
2. Preoccupation with large innovation challenges
3. Expectation of breakthrough solutions
4. Heterogeneous participants
5. Targeted collaboration
6. Long-term perspectives
7. Rich innovation toolbox
8. Applied orientation

### Focus on experimentation

Unfortunately, and despite of thoughtful lists of features like these, innovation labs frequently fail (Cornelius, 2021). For example, Ahuja (2019) suggests that innovation labs fail because they lack alignment with the business, define and measure too few innovation metrics and assemble unbalanced talent teams. Klamann (2021) echoes many of the same reasons why innovation labs fail, including:

- Don’t have a clear objective and success factors defined
- Don’t have long term goals defined, broken down into clear quarterly
- Are not aligned to company goals
- Lack KPIs

### Application of systemic thinking

While many larger companies speak fondly about innovation, they often view it cautiously, at best, or even in some cases, almost resentfully.
According to Pemberton (2016), a Center of Excellence is:

“A physical or virtual center of knowledge concentrating existing expertise and resources in a discipline or capability to attain and sustain world-class performance and value … (that) need to focus on a tight scope defined around a specific capability such as marketing analytics or digital commerce … (and) pushing beyond standard performance norms to deliver incremental value to the organization.”

COEs can be organized around internal talent and/or through partnerships with start-ups, universities and not-for-profits. The insourcing/outsourcing decision is critical to the success of COEs which, when insourced, often suffer from poor performance – as Speelmon (2022) and Evans (2016) describe. Speelmon suggests that COEs fail for these reasons:

- Lack of Strategy
- Insufficient Resources
- Poor Management
- Perceived Value

Evans (2016) sees other problems with COEs:

“At the heart of the challenge is a fundamental misunderstanding of who (or what) the COE is and the specific value it is expected to provide to the business. Ask the leaders of any COE to describe the mission of their respective COE and you get a myriad of responses … the challenge is that each item listed requires different degrees of expertise, managing different processes, with different outcomes, each of which with different success metrics. As COEs try to be ‘all things to all people,’ the business is left wondering what overall value the COE is providing.”

Corporate venture capital (CVC) organizations are another breed altogether. They look for ideas everywhere and invest in the ones they believe best align with the company’s strategic direction, or even the ones most likely to redefine strategy. In many respects they behave like private equity venture capitalists, though unlike PEVCs, they spend their own money. CVC organizations fail for several reasons (Teppo and Wüstenhagen, 2009; Wendt and Spaulding, 2019; Haslanger, Lehmann and Seitz, 2022). Some of them include incompatible corporate cultures, too much caution and the lack of patience. But perhaps most importantly, the failure to understand the essence of venture investing is the reason why CVCs fail (Wendt and Spaulding, 2019):

“Venture capital works best when it plays by a set of rules that are higher risk than most corporate executives are used to. VCs invest in innovations that are far from product-ready, and many fail to pan out — the price of developing unproven ideas. Corporate VC executives must be given latitude and permission to risk failure.”

Traditional structures – labs, COEs and CVCs – fail because they are run by people with little or no innovation experience. They also fail because they immediately become entities of their own, succumbing to all of the “best practices” of traditional corporate structures. They’re also politically pre-programmed with project slates developed by the same employees who fail to understand that innovation does not keep a schedule with planned stops.

One threat to innovation stands out from all the rest: corporate culture. Research suggests that cultures are resistant until financial metrics suggest change is existential (Andriole, Cox and Klin, 2017). Innovation culture should be “sold” by innovation survivalists, not organizational survivors. Survivors have navigated corporate careers that dodged countless change initiatives. Worse, late in careers, as work horizons shorten and salaries peak, survivors have strong personal incentives to...

Substantive innovation requires far more than inspirational quotes about change and irrelevance, aspirational task forces, dedicated funding and other forms of stagecraft
In fairy tales and conference rooms, the mirror lies to appease the royal

References:


Birkinshaw, J., C. Bouquet and J. L. Hrebiniak. (2011). ‘‘Culture is like the wind. It is invisible, but can help you sail or drag you off course.’’ Long Island University, Business Finance Report, 18 (4), 27–33.


About

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Industry Analysis
Taking a Look at Africa’s Billionaires, Innovation, and Impending Change

Innovation and New Ventures in Africa – The Road Ahead
David Grammig
Founder and Managing Director, Grammig Advisory

This analysis section draws on one of the most essential tools for analyzing a commercial ecosystem, and facilitates an understanding not just of what is, but what is becoming.

In this issue, David Grammig, of Grammig Advisory, gives us a birds-eye view of entrepreneurship and innovation in Africa, from the opportunities to the challenges posed by still-emerging frameworks for knowledge sharing, and for collaboration infrastructure and education.

Looking forward, this section in future issues will similarly be written by leaders addressing transformation in ecosystems that are generally less well understood, yet critically imbricated within our shared global context.
Innovation and New Ventures in Africa — The Road Ahead

David Grammig
Founder and Managing Director, Grammig Advisory

In this interview with the Coller Venture Review, David Grammig, Founder and Managing Director of Grammig Advisory, talks about the future of Africa, and how new venture is growing on the continent.

Coller Venture Review — Hi David, thanks for taking the time to share your venture and inspiring vision. Let’s start at the beginning. I understand that you help connect private investors in Africa. Can you explain?

David Grammig — We create a network of family offices, part of a network that we intend to span the continent. It is the continent with the fastest growing population, and Africa is not only growing but leapfrogging. The opportunities are huge.

CVR — Can you explain a bit when you say “opportunities” — how is this linked to funding and support for new ventures?

Grammig — Great question. We are principally focused on three areas: The first is Food Tech - broadly speaking, this means feeding the continent. We also see many opportunities in the Mobility sector. To us, this is not just about supporting mobility across a city (for example) but, more fundamentally, about connecting networks of people, across villages, to one another. Finally, we are focused on Energy. Again, we look downstream to impact. For us it’s not just cool ideas, but the transformative potential of those ideas. In the energy sector, for example, this includes energy solutions so kids can study at night and even participate in home schooling.
What we are not is a gateway for foreigners to recognize, which is an important point to make. Having said that, there is a lot of room for foreigners to participate. For example, we have a Swiss company active in Ghana, they work with Ghanaian cocoa farmers. They have a triple impact – environment, social, and health. They help farmers who earn less than a dollar a day, and I can say it is a true collaboration.

Grammig — I think it’s the sense of innovation and the drive and the resourcefulness of the people — ideas that are really ingenious, that solves problems that are there. People on the ground are often the best problem solvers, and the people on the ground in Africa are really still very close to the problems they are trying to solve – and with relatively less resources. In my view, the relatively short distance between any given problem and the need for a solution is a real differentiator. As I said earlier, if we can’t solve the energy problem, it’s not that electricity might cost a bit more… it’s that children can’t get educated.

CVR — Africa is a big continent, and it is hard for those of us who haven’t lived or worked there to really get a sense of the huge potential you’ve alluded to, beyond the specific areas of focus you’ve mentioned. Can you help further frame it?

Grammig — Sure. Africa has 54 countries with 54 governments and endless numbers of political systems. Several are financially sophisticated and internationally connected – there is tremendous wealth in countries as far afield from one another as Rwanda, Egypt, Morocco, Nigeria, Kenya, South Africa, Tanzania, and even Zimbabwe. These countries and others have tremendous natural resources, and very highly educated people – but also sanctions and a political elite that has been grabbing onto power for way too long. So, in that sense, I would say it is both huge potential — and also of course huge challenges.

CVR — Are you alluded to infrastructure challenges here?

Grammig — Absolutely. There are huge struggles with infrastructure and connectivity. A family that attended my conference had to travel 24 hours… air travel is a big hindrance to trade and connecting. South African Airlines mostly does domestic flights only. Electricity is constantly being cut off. This is not helping with business. The South African airline is the most sophisticated in the continent, and even they have problems. There are problems also with loans, and with the banking system. In fact, banks will finance real estate and that’s probably about it. There are many stories of African entrepreneurs who went to the U.S. or Europe or the Middle East to get the capital they need to build their businesses. The sophistication of the banking system in Africa generally is very low, which is why the African money is going to Dubai, where they receive the range of financial services that they need but don’t receive at home. This is also why Mauritius is pushing to become the hub of private banking in Africa, an alternative to Dubai.

CVR — The path for change sounds complicated – how do you bring this all together into a unifying framework?

Grammig — For us, it always starts with the relationship. There are families with four generations of wealth, and it’s critically important to build trust and be able to work across not just across countries, but also within countries, across generation. There is also huge heterogeneity. For example, if you google Kenya’s richest families, 4 out of 5 have Indian backgrounds. They are Africans with Indian roots – and this is also partially in South Africa, Kenya, and Tanzania. So culture as well as ethnicity plays a huge role in each and every relationship.

In addition, now that the continent is growing, there is a lot of new wealth. But clever entrepreneurs are not always such clever investors – this is a different kind of diversity, a sort of intellectual and experiential heterogeneity. So we have to address that too, in building the relationship. In this case, we help members of our network not just to seize opportunities, but then to think what to do with it, how and where to invest. There are endless interaction effects – in this case, the new money is learning from the old money how to preserve wealth.

Finally, we keep in mind context and history. A family that made its wealth in agriculture, for example, and is struggling with climate change… has a very different set of challenges than a family that started out in mining.

CVR — How do you relate the micro and the macro – the families and the continent?

Grammig — Well, at the family level, it’s clear that I’m not African. And I’ve had to learn – it’s important to recognize that they have different family networks – that they are, for example, patriarchal with large families. This makes a difference. And it makes a difference if you have a Christian or a Muslim family, it makes a difference if everything is being split between the children or passed on to the first born. You have to find and understand their own way of doing it.

Beyond that, one has to understand if a family wants to invest outside of the country, or maybe even outside the continent. Some have the notion that one has only really made it if they’re recognized in the U.S. and Europe. It’s a real asymmetry of sorts – while African Americans are realizing they want to invest on the continent, the locals are pushing the money out. When we work together, we look for opportunities abroad as well as on the continent. And we understand the unique challenges of each. For example, we had a Kenyan family that spoke about their biggest failure, and it was their failed expansion into Tanzania. When they spoke to a Tanzanian family that we brought them together with, the Tanzanian family said “Everything you did was wrong. But also what was wrong was also the conclusion you drew from it.” And in this way, they learned from each other. They actually entered a joint venture, and are now working together. They need to learn from each other still.

This working through the families and then through the families across the continent is no small task. I spoke to a gentleman from Nigeria who asked, “Do you understand the continent?” And I said, “No, but neither do you. You as a Nigerian don’t understand the Kenyans and the Mauritians. This is exactly why I’m doing what I’m doing. So you can learn from one another, and work on things together.”
As a non-African, you don’t go by yourself. You need the local partner…if you go to Zimbabwe and buy a blueberry farm, two weeks later it’s no longer yours.

Grammig —

Great question. Here I would say Africa is still really protective. I think it’s best summarized as “Whatever I share with you, you will use against me to my disadvantage.” Remember – if you’ve made it in an African country, you’ve made it despite the circumstances – despite a lack of education, workers, corruption. You made it because you were clever and smart and navigated the system. So the thinking is – the more I tell you about the system, the more I give away and then you become a competitor. But this needs to change, so everyone can work together and expand, and this is something we are trying to help change.

CVR —

Beyond everything you have already shared with us, how would you help us understand the broader culture – i.e., what should those thinking about working in Africa remember to keep in mind?

Grammig —

Absolutely. First, for all of us, it’s about sharing and growing cultural know-how – confidence, vision, and horizons. Beyond that, I aspire that there will be greater connectivity between families to talk to each other, and work together and align their activities, whether in business or philanthropy – to have trust and collaboration with one another. With the African free trade agreement, the first step has been made, but Africa is still very fractured. Even greater connectivity between economies will facilitate free trade, and greater connectivity between private actors will make them a little less private, and open for real collaboration with their peers. I think of this practically as “We have a background in healthcare, so let us take care of hospitals and you take care of education, even if we work in your country and you put your network in ours.”

It’s amazing how much is being done on the continent, but still they are all doing it on their own. They have so much work ahead of themselves, if everyone cooks their own broth, it’s won’t be quick enough to get Africa where it needs to be. What is important – and what we fundamentally aspire to – is a geographic approach where tons of individual entrepreneurs work hand-in-hand with one another, and with governments. It will ultimately be a collaboration of global and local player players who will take know-how, technology, and funding, and drive change.

CVR —

In summary, and as you look ahead, can you summarize for us the success that you aspire that efforts like yours will bring about twenty years from now?

Grammig —

Absolutely. First, for all of us, it’s about sharing and growing cultural know-how – confidence, vision, and horizons. Beyond that, I aspire that there will be greater connectivity between families to talk to each other, and work together and align their activities, whether in business or philanthropy – to have trust and collaboration with one another. With the African free trade agreement, the first step has been made, but Africa is still very fractured. Even greater connectivity between economies will facilitate free trade, and greater connectivity between private actors will make them a little less private, and open for real collaboration with their peers. I think of this practically as “We have a background in healthcare, so let us take care of hospitals and you take care of education, even if we work in your country and you put your network in ours.”

I hope there will be greater connectivity between economies to facilitate free trade, and greater connectivity between private actors, to make them a little less private, and open for real collaboration with their peers. I think of this practically as “We have a background in healthcare, so let us take care of hospitals and you take care of education, even if we work in your country and you put your network in ours.” If everyone cooks their own broth, it’s won’t be quick enough to get Africa where it needs to be.

About

David Grammig is based in Zurich, Switzerland, and is the visionary behind an exceptionally unorthodox network-building approach in the family office space, leveraging his career experience in banking, intelligence and business development industries.

As former Director for International Relations at a GCC-based single family office, David has established, and continues to grow, valued connections with fellow family offices over the years. David lives by the credo “no level of technological sophistication can replace a handshake,” which is no different regarding his family office networks.
Coller Venture Digest

Coller Venture Digest refers our readers to some of the year’s best reads in venture, as suggested by the members of our Advisory Board.

These articles cross the gamut from Entrepreneurial Team Formation to Funding New Ventures, Leadership in Venture, Public Policy and Entrepreneurship, Success in Venture Creation, and Change in Private Equity.

Our digest will continue to be updated, and we are pleased to provide hard copies upon request.

Entrepreneurial Team Formation

Rapid Response Through the Entrepreneurial Capabilities of Academic Scientists
Andrew Park; Azadeh Goudarzi; Pega Yagmaje; Varkey Jon Thomas; Elicia Maine
Nature, pages 802–807 (2022)
https://www.nature.com/articles/s41565-022-01103-6

Academic scientists play a central role in the production and translation of breakthrough scientific inventions through the formation of university spin-offs. Well-endowed science-based ventures, attracting resources and advancing novel capabilities, can rapidly respond to pressing global health and humanitarian crises such as COVID-19. Policymakers are highly motivated to leverage university science for the dual purpose of solving emerging challenges and increasing economic productivity. Yet scholars suggest that, despite increasing investment by the United States government in university research, innovation ecosystem growth is lower today than it has been in the previous four decades. And yet academic scientists who develop entrepreneurial capabilities can make strategic, path dependent decisions that enable university spin-offs to rapidly respond to global crises.

The Transformation of Self-Employment
Innessa Colaiacovo; Margaret G. Dalton; Sari Pekkala Kerr & William R. Kerr
NBER Working Paper 29725, February 2022
https://www.nber.org/papers/w29725

Over the past half-century, while self-employment has consistently accounted for around one in ten of the United States workforce, its composition has changed. Since 1970, industries with high startup capital requirements have declined from 35% of self-employment to 24%. This same time period also witnessed declines in “hometown” local entrepreneurship and the probability of the self-employed being among top earners. Using 2016 data, we show that high startup capital requirements are linked with lower profitability at small scales. The transition away from high startup capital industries appears most closely linked to changes in small business production functions and less due to advantageous reallocation to other opportunities, growth in returns-to-scale among large businesses, or a worsening of financing conditions and debt levels.
Funding New Ventures

Invention Value, Inventive Capability, and the Large Firm Advantage
Ashish Arora, Wesley M. Cohen, Hongyi Lee, and Divya Sebastian
https://www.nber.org/papers/w20324

Larger firms tend to profit more from their inventions than do their smaller counterparts. In this paper, the authors find that this does not occur because large firms produce inventions of higher technical quality. Rather, it is because they extract more value from their inventions, likely through more effective commercialization, which includes product development, marketing, distribution channels, and manufacturing. The researchers estimate that doubling a firm’s size is associated with an increase of between 5 and 16 percent in the value of a given invention, depending on whether or not one controls for the firm’s capitalization.

Bucking the Trend: Why do IPOs Choose Controversial Governance Structures and Why do Investors Let Them?
Laura Casares Field; Michelle Lowry
Journal of Financial Economics
Volume 161, Issue 2, October 2022, Pages 27–54

While the percentage of mature firms with classified boards or dual class shares has declined by more than 40% since 1990, the percentage of IPO firms with these structures has doubled over this period. We test whether IPO firms implement these structures optimally or whether they are utilized to allow managers to protect their private benefits of control. Both shareholder voting patterns and changes in firm types going public suggest that the Agency Hypothesis best explains IPO firm’s use of dual class, particularly when there is a large voting-cash flow wedge. In contrast, among firms with high information asymmetry, classified board structures are better explained by the Optimal Governance hypothesis.

Leadership in Venture

Does Workplace Spirituality Influence Knowledge-Sharing Behavior and Work Engagement in Work?
Jawad Khan, M Usman; Imran Saeed; Amna Ali; Hena Gul Nisar
Management Science Letters
Volume 12 Issue 1 pp. 51–66, 2022
DOI: 10.5267/j.msl.2021.8.001

Management scholars view workplace spirituality as the main factor behind building trust among employees and playing a pivotal role in enhancing the organization’s positive outcomes, i.e., knowledge sharing behavior & work engagement. Underpinning social exchange theory, we explored the linkage between workplace spirituality, knowledge sharing behavior, and work engagement. We further studied to look at the mediating effect of trust between workplace spirituality and positive outcomes. Data was collected from six private companies, the total number of respondents was (n=196). The study’s analysis showed that workplace spirituality substantially positively impacts knowledge sharing behavior and work engagement. Furthermore, the link between workplace spirituality, knowledge sharing behavior, and work engagement is positively and statistically significantly mediated by trust. Thus, this work contributes significantly to the research paradigm by presenting workplace spirituality as a solution for high-rise trust among employees, fostering employee engagement in their work, and improving the capacity of knowledge-sharing behavior. Additionally, at the end of this study, theoretical and managerial suggestions, future avenues, and limitations are stated.

Public Policy and Entrepreneurship

Entrepreneurship in Times of Crisis
Steven Pattinson and James A. Cunningham
The International Journal of Entrepreneurship and Innovation
Volume 23, Issue 2, 2022
https://doi.org/10.1177/14662362211097229

These are unprecedented times for entrepreneurs, innovators and their ventures in all sectors. Some have repurposed their ventures and expertise to support communities and frontline workers dealing with the COVID-19 pandemic. Others face critical decisions about the future viability of their ventures for economic and political reasons. For example, the conditions for supporting entrepreneurship during crisis are especially challenging for entrepreneurs and small businesses due to the high levels of economic uncertainty created. Conversely, entrepreneurs play a crucial role in helping economies overcome crisis through the generation of innovations that support, inter alia, new ways of working. Some entrepreneurs will face the difficult decision to close their ventures and have to deal with the stigma of business failure. From business failure other entrepreneurs will consider creating another venture.
Success in Venture Creation

Mitigating or Magnifying the Harmful Influence of Workplace Aggression: An Integrative Review

Rui Zhong, Huixwen Lian; M. Sandy Hershcovic, Sandra L. Robinson
Academy of Management Anals 28 Oct 2022
https://doi.org/10.5465/amr.2021.0144

As a substantial amount of research has accumulated on the harmful consequences of workplace aggression for target employees, the authors believe it is now of particular importance to examine moderators that alleviate or amplify these harmful effects. They ask the following questions: For whom is workplace aggression more or less detrimental? Moreover, what can target employees and the organization do to mitigate the harmful effects of aggression? The authors propose to address these questions with an integrative review of empirical research on moderators of the harmful effects of workplace aggression on targets. In this review, they identify and illustrate five broad perspectives that existing research has primarily used to explain the moderating effects: resource-depletion, social-relational, appraisal, self-regulation, and social-influence perspectives. In addition, they identify a large number of moderators and synthesize them into three categories of individual moderators—trait-based, intrapersonal, and coping-based—and three categories of contextual moderators—collective, interpersonal, and job-based. They conclude with a general discussion of an overarching summary, redundant and saturated findings, as well as research gaps and future directions.

Executive Stock Options and Systematic Risk

Christopher Armstrong; Allison Nicolucci; Frank S. Zhou
https://doi.org/10.1016/j.jfineco.2021.09.010

Employing a novel control function regression method that accounts for the endogenous matching of banks and executives, the authors find that equity portfolio vega, the sensitivity of executives’ equity portfolio value to their firms’ stock return volatility, leads to systemic risk that manifests during subsequent economic contractions but not expansions. They further find that vega encourages systematically risky policies, including maintaining lower common equity Tier 1 capital ratios, relying on more run-prone debt financing, and making more procyclical investments. Collectively, the evidence suggests that executives’ incentive-compensation contracts promote systemic risk-taking through banks’ lending, investing, and financing practices.

Mapping the Venture Capital and Private Equity Research: A Bibliometric Review and Future Research Agenda

Cumming, D., Kumar, S., Lim, W.M. et al.
Small Business Economics October 2022
https://doi.org/10.1007/s11187-022-00684-9

The fields of venture capital and private equity are rooted in financing research on capital budgeting and initial public offering (IPO). Both fields have grown considerably in recent times with a heterogenous set of themes being explored. This review presents an analysis of research in both fields. Using a large corpus from the Web of Science, this study used bibliometric analysis to present a comprehensive encapsulation of the fields’ geographical focus, methodological choices, prominent themes, and future research directions. Noteworthily, the foundational themes in venture capital research are venture capital adoption and financing processes, venture capital roles in business, venture capital governance, venture capital syndication, and venture capital and creation of public organizations. In private equity research, style drift into venture capital emerges as a key theme alongside buyouts and privatization, and valuation and performance of private equity investment.

Success in Venture Creation

Teaching Entrepreneurial Negotiation

Stephen Humphrey; Robert Macy; Cynthia Wang
Negotiation Journal Volume 38, Issue 1, January 2022

Despite the importance of negotiation skills to entrepreneurs, the pedagogy of teaching entrepreneurship has not been fully developed. This paper provides guidance to educators in designing and delivering negotiation content with an entrepreneurial focus. The article identifies the unique challenges to entrepreneurial negotiations, unpacks critical concepts, and lays out a guide for teaching entrepreneurial negotiation using educational content.
Advisory Board

Prof. Gad Allon

Professor Gad Allon is the Jeffrey A. Keswin Professor and Professor of Operations, Information and Decisions, and the Director of the Management and Technology Program at the University of Pennsylvania. Professor Allon’s research interests include operations management in general, and service operations and operations strategy in particular. He has been studying models of information sharing among firms and customers both in service and retail settings, as well as competition models in the service industry. His articles have appeared in Management Science, Manufacturing and Service Operations Management and Operations Research. Professor Allon won the 2011 “Wickham Skinner Early-Career Research Award” of the Production and Operations Management Society. He is the Operations Management Department Editor of Management Science and serves on the editorial board of several journals. Professor Allon is the Co-founder of ForClass, a platform that enables professors to drive higher student engagement and accountability in their classrooms. He regularly consults firms both on service strategy and operations strategy.

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Professor Stern’s research explores how innovation and entrepreneurship differ from traditional economic activities, and the consequences of these differences for strategy and policy. His research in the economics of innovation and entrepreneurship focuses on entrepreneurial strategy, innovation-driven entrepreneurial ecosystems, and innovation policy and management.

In 2005 he was awarded the Kauffman Prize Medal for Distinguished Research in Entrepreneurship.

Professor Stern works with practitioners in bridging the gap between academic research and the practice of innovation and entrepreneurship through advising startups and other growth firms in the area of entrepreneurial strategy, as well as working with governments and other stakeholders on policy issues related to competitiveness and regional performance. He is the director and co-founder of the Innovation Policy Working Group at the National Bureau of Economic Research.

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In theory, theory and practice are the same. In practice, they are not.

Albert Einstein