

Igor Tulchinsky

Founder, Chairman, and CEO
WorldQuant, LLC



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The Prediction Opportunity

At the beginning of the 20th century, the president of a bank in Michigan gave arguably one of the worst investment recommendations in history: be wary of Ford Motor Company, he told a lawyer, because the automobile was “only a novelty—a fad.” A half-century later, U.S. Postmaster General Arthur Summerfield predicted in the 1950s that the country was on the verge of launching “rocket mail”—with the promise that missiles would deliver letters across continents in mere minutes. As the century neared its end, experts likewise forecasted a Y2K computer software bug that never materialized.

Anecdotes like these dominate conversations about predictions—and while they’re memorable, they’re also misleading. For all the false predictions, that same century also saw humankind make remarkable strides in developing and improving technologies such as radio, radar, sonar, and satellites, which provide us with information and tools to better guide predictions for the future.

As these tools and access to data improved exponentially, so did the quality of the predictions they generated. Today, weather forecasts in the U.S. are accurate approximately 80 percent of the time. Our ability to predict where and when hurricanes will land is more than twice as accurate as it was in 2005. Our predictions in many fields have become so advanced that we find ourselves in what I like to call the Golden Age of Prediction. Humans have not suddenly become better at looking ahead—we’re still plagued with cognitive biases and overconfidence—but the quality of the predictive tools and data we use has improved drastically. We’ve also become wiser about how technology can augment our decision-making and prediction abilities.

Imagine what kind of progress we’ll see in the future. Apple introduced its first iPhone in 2006, and a little over a decade later, its watches are used to identify whether you have irregular heart rhythms, assisting doctors in predicting potential health issues that could



arise. Hong Kong is exploring how artificial intelligence might help predict train malfunctions before they happen. Police departments in California and Tennessee are already using AI to help predict which officers are likely to have negative interactions with the public, and departments in New York, Louisiana, and Washington are considering doing the same. Machine learning is being used to predict crop yields, helping governments address farming populations at risk by providing financial or practical assistance. Quantum machine learning is on the horizon, which will open the door to solving even more complicated problems. Prediction opportunities will be limited largely by our creativity and imagination—and by our technical ability to execute. The good news: our technical and computational abilities have never been better.

Our world is generating more data than ever before, and we've only scratched the surface of what it can tell us about business outcomes, the environment, and our health. No wonder

quantitative analysis is one of the most valuable skill sets today. Those who possess both the creativity to think unconventionally and the hard skills to build algorithms that can sift through, analyze, and translate that data into insights and predictions are in short supply. That's part of the reason for the genesis of WorldQuant University, a tuition-free online university that offers a master's degree in financial engineering. Students become more fluent in the languages and convergence of machine learning, computer programming, and data science—skills that are driving development in a world shaped by data and technology.

Not only can quantitative thinking help catalyze new ideas, but it can also help accelerate cutting-edge projects already underway. Take antibiotic resistance, for example, which remains one of the world's largest health risks. Dr. Chris Mason, a professor at Weill Cornell Medicine, has been swabbing mass-transit systems in major cities across the world to develop a DNA map of

global antibiotic resistance, and thus help inform new drugs and treatments for antibiotic-resistant bacteria.

To accelerate the pace of Dr. Mason's work, fellows from WorldQuant have partnered with his team to map antibiotic resistance and overlay it with global travel patterns and urbanization trends. Our goal is to develop the insight required to predict how antibiotic resistances spread and, by doing so, stem its tide. Our work with Dr. Mason is just the tip of the iceberg.

Never before have we had such vast quantities of data at our disposal or possessed such sophisticated tools and talent to make sense of it and share insights across continents and disciplines. As I look ahead, I can make this prediction with confidence: we're in a time of tremendous promise and opportunity, and it will take quantitative thinking and hard skills to unlock its full potential.