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## Ready, Willing, and Able

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# READY, WILLING, AND ABLE

NO MATTER THE MAJOR,  
COLBY'S LIBERAL ARTS  
GRADUATES DIVE INTO  
FINANCIAL TECHNOLOGY—  
AND THRIVE

By Gerry Boyle '78

Photography by Gabe Souza

In his glass-walled corner office high above the busy Hudson River in midtown Manhattan, MarketAxess CEO Rick McVey describes the skill set of a particular group of hires he has personally helped bring into his fast-growing financial technology company.

“What I’ve seen ... is that they are not afraid of anything new, and they come in well prepared,” McVey said. “But the best thing is you can throw them into a new challenge and they don’t panic. They just dive in and figure it out.”

And they’re all fresh from Mayflower Hill.

MarketAxess has transformed the global fixed-income marketplace, bringing an electronic platform to bond trading and data analysis. The nearly 20-year-old company has irrevocably changed the face of the industry with a stream of cutting-edge tech products and services, providing more liquidity, efficiency, and data.

And in the midst of this high-tech, competitive, innovative environment, McVey says, he’s created “a base of believers” in the liberal arts at MarketAxess, because of the success Colby graduates have had there. “It’s been so interesting to me,” McVey said, “that we’ve placed Colby graduates in very different parts of the company and had the same success rate in all the different areas.”

So what gives? How, after four years on Mayflower Hill, do these Colby alumni have an outsized impact in a fintech

company that is focused on, for example, changing the way municipal bonds are traded? What makes them able to dive in and figure it out? “That’s part of the liberal arts education,” said Associate Professor of History John Turner, who taught Tagg Martin ’13, history major turned MarketAxess go-to analyst. “You’re always learning. ... You are always going to be mastering something, as opposed to having mastered.”

The connection that has made Colby the most represented college or university at MarketAxess began when McVey was introduced to the College through his daughter Lane McVey. Lane enrolled in the Class of 2012, and her sister, Grace McVey ’16, also chose Colby. Both played on high-powered lacrosse teams, and while their father was impressed by Colby athletics—he was in the stands for most weekend games—he soon became a convert to Colby academics. “They were learning so many different disciplines, and they left with the confidence that they could take on any new challenge,” McVey said.

With that in mind, he began seeking out likely hires on Mayflower Hill. The roster, in addition to Martin: Grant Lowensohn ’17 is a researcher. Gemma Bready ’17 is in client services. Alex Rinker ’17 is on a tech team. Andrew Beacham ’17 is an analyst. Joining the company this summer are Jack Colleran ’19, Gerry Nvule ’19, and Jon Lee ’19. They are part of a group that at Colby focused on sociology, economics, global studies, computer science, art, and history.



“

You have to have the big picture, to understand the application and how it's going to be used.”

—Alex Rinker '17

A history major with minors in economics and administrative science, Martin works directly with McVey and other top MarketAxess executives, mostly on corporate strategy and development. He collects data that drives quarterly results reported to the company's board of directors, works with product management teams to build financial plans for new markets, and helps model potential impact of changes in pricing or products. How does the market trade? Are there any other electronic platforms? If so, what is their pricing model for municipal bonds?

To some, this might seem a long way from a history major, but not so, Martin says. "I'm sure that my history-econ double focus helped me a lot, through my presentation ability and being able to frame up potential opportunities," he said.

He recalled writing a paper on the feasibility of a purely Islamic economy for a seminar with Turner, an Islamic history scholar. Six years later, Turner recalled the paper, too, noting that it drew on early Islamic law going back to the 10th century and considered the economic changes wrought by new oil revenues of the 1950s and 1960s. Martin's argument, he remembered, adeptly tapped a variety of threads of information and considered how the economic system adapted to changing circumstances.

A side trip on the way to a career in finance? Not at all, according to Turner. Historical writing, he said, is an argument over the meaning of data points, and the writer must articulate a case. Why did this happen? What makes this matter? What conclusions can be drawn from the material? "They have to distill it to what are the most important elements so they can explain it to somebody, to quickly and succinctly say why they should care."

But how to get there?

"A lot of this is synthesizing different explanations and weighing the strengths and weaknesses of them," said Jennifer Yoder, the Robert E. Diamond Professor of Government and Global Studies. "Trying to articulate what you think is going on and what you think the implications are."

Yoder imparted this to Bready, who coupled her global studies major with a minor in managerial economics. Bready worked her way through courses on Europe between the world wars, the Holocaust, and the most recent European migration crisis and Brexit. Her exploration led to a senior independent study with Yoder on the forces behind the emergence of nationalist populist parties. "She wrote the most thoughtful draft and then took her own path," Yoder said.

Like the other faculty interviewed for this story, Yoder said her student deserved most of the credit for her ideas and enterprise. "I just gave her the minimal amount of advice," Yoder said. "I mean, just the lowest of guardrails."

The guardrails are also set low at MarketAxess, where Bready is on the account services desk, teaming up with the client services desk on the operational side and also meeting with clients to help maintain those relationships on the MarketAxess platform.

Bready said being exposed to international studies, economics, and other disciplines has helped her to be prepared for the unexpected and trained her to think on her feet. She also said Colby imbued in her a sense that it was her responsibility to be able to find ways to solve challenging problems and navigate complex situations. "If you don't know the answer immediately, Colby has prepared you with the skills to find that answer," Bready said.



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**—Gemma Bready '17**

Faculty spoke of the progression that takes students from learning a working lexicon of facts and principles to being able to analyze—and sometimes question—the assumptions that are being made to build that framework. "It's so critical for students to be able to explain relationships," said Pugh Family Professor of Economics David Findlay, "and not simply assert causality."

Findlay said his economics students reach what he calls "the second level" of understanding, whether they are studying the effect of zero-interest rates on monetary policy or the implications of blockchain currency. Just as students come to understand the core of an economic model, he said, "you twist something in it. You alter an assumption."

So students then have to explain the effects of this seismic disturbance, because soon they'll be confronted by one in real life. "To know what we've done in class, that's decent," Findlay said. "But when that semester is over, when they leave Colby, the world is evolving. ... There are things coming that many of us can't even predict. I want the students to take the knowledge that they have and adapt it to new situations."



**Somebody who is asking questions is somebody who can solve problems.”**

**—Cheryl Townsend Gilkes, John D. and Catherine T. MacArthur Professor of Sociology and African-American Studies**

Not a problem, said Grant Lowensohn '17, who majored in economics with a concentration in financial markets and a minor in statistics. Now Lowensohn does research for the tech and sales desks, using data from the MarketAxess platform to provide products for clients to help with their performance and reporting. Over lunch at a noodle shop in Hell's Kitchen, he said his academics set him up perfectly. “A lot of the work I did senior year, I'm working with now.”

The big-picture perspective isn't confined to economics or history. Rinker, now an applications developer for MarketAxess, took Findlay's courses—and had a similar experience as he studied with Professor of Computer Science Dale Skrien. “In my classes, what I try to do is not just lecture them about the material but to get them to think about the material,” Skrien said.

Rinker, Skrien recalled, took a yearlong class where the focus was not just writing code, but writing code that was clean and efficient and readable. The work is refined in multiple iterations, so students learn to spend considerable time thinking about organization of code before they write. “I want them to do more than regurgitate,” Skrien said.

In one exercise (spoiler alert for CS students here), he asks students to solve a problem and gives them an algorithm to use. They soon realize that the algorithm doesn't work and determine why. A new algorithm is introduced and eventually they find it doesn't work, either. After that, the students are on their own. “I'm not just giving them the solution,” Skrien said.

Rinker said the move to MarketAxess was a big adjustment, as he went from learning coding languages and different ways to implement algorithms to honing his skills in Java and learning the ins and outs of the technical application of that language to the company's products and clients' needs. “It was a challenge,” he said, “and it looked pretty intimidating, but I was willing to give it a shot. ... It was just learning bit by bit and taking it one step at a time.”

That he had an economics background and is versed in the dynamics of financial markets has been a boon as he consults with the company's analysts, Rinker said. “Having that background, you have to have the big picture, to understand the application and how it's going to be used.”

When Computer Science Chair Professor Bruce Maxwell was told of his graduates' experiences in fintech, he turned to his laptop and pulled up the department's mission statement.

“These are outcomes that we want students to achieve after coding,” Maxwell said, and proceeded to rattle them off.

“Proficiency in computational thinking. ... Ability to analyze systems at three levels of computer science—theory, software, and hardware. ... Proficiency in the design and implementation of algorithms using multiple programming languages. ... Apply computational thinking to a diverse set of problems and disciplines ... Communicate effectively and collaborate with others. ... Adapt to new challenges and computational environments.”

He turned from the screen and smiled. “That's what we're trying to give them.”

Is it working? For Rinker—and McVey—it certainly is. “We've been pleasantly surprised by the quality of the computer science majors coming out of Colby,” McVey said.

And their numbers are growing. The department has seven tenure-track positions; five years ago, there were three. One in three students at Colby today will take an intro computer science course. One in four will take a higher-level course. One in 10 will earn a computer science-related degree.

What will they learn, in addition to coding languages? “How to take the problem or process and divide it into steps,” Maxwell said. That skill is imparted across the campus and disciplines.

Just ask Jack Colleran '19, who will join MarketAxess after completing a 10-week internship at the company last summer. Colleran is an economics major with a concentration in financial markets. He talks about his studies in government (debating voter ID laws, among other assignments) and a class he took on weather cycles with Jim Fleming, the Charles A. Dana Professor of Science, Technology, and Society.

“This is how it works,” Colleran explained. “You solve an econ problem or a financial-markets problem, but Colby really helps you figure out how to solve problems in general, which I find to be very valuable, because realistically there is no school or college that teaches how to deal with the day-to-day workings of a company like MarketAxess.”

A safety on the football team, Colleran spoke about the lessons of Colby athletics: the discipline of daily 5 a.m. practices, how to be a contributing team member, how to deal with failure and success. He brought those lessons to bear

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—Tagg Martin '13

*MarketAxess CEO Rick McVey P'12, '16, center, confers with analyst Tagg Martin '13 at the company's offices at Hudson Yards in midtown Manhattan.*

in his internship, where he rotated through three desks at MarketAxess.

He said he was working alongside employees with 30 years experience in finance technology, which was intimidating—but not for long. “You get a little bit nervous, but that’s part of being alive,” Collieran said. “You have to ask, ‘How can I help you? What can I deal with?’”

That willingness to ask questions, to acknowledge what you don’t know, and be determined to learn—that is essential to all learning, said Cheryl Townsend Gilkes, the John D. and Catherine T. MacArthur Professor of Sociology and African-American Studies.

Gilkes taught another MarketAxess-bound senior, Gerry Nvule, a government major with a computer science minor.

In her course African-American Religion in the United States, Nvule proved himself to be “really interesting, smart, very curious,” Gilkes said. Nvule, she said, would ask the questions that would help Gilkes to understand what students, many of whom have no formal religious background, needed to better connect with the material. “Somebody asking questions is somebody who can solve problems,” Gilkes said. “You keep asking new questions once the old ones are answered.”

When McVey visited Colby last year with a MarketAxess recruiting team, Nvule had already researched the company and considered the role he might play there. He settled on business analyst, asked McVey some questions, and eventually did interviews by phone and in New York.



*From left, Colby seniors Jack Collier, Gerry Nvule, and Jon Lee. The trio begin work at MarketAxess this summer.*

Nvule describes Colby students as “package deals,” with no two packages the same. His own includes lacrosse and an entrepreneurial spirit that has seen him pitch a social-connectivity app call REEF, which would help students find their friends on campus.

He said he has a host of other tech ideas (he’s particularly interested in cryptocurrency) and hopes to be innovative at his new company as well. “It’s a small company where your ideas can come to fruition—if you can back them up,” Nvule said.

How did his four years at Colby contribute to that confidence? “Professors here hold their students to this high standard,” he said. “You figure out how to get the job done.” In the classroom and on the playing field, he said, there are high expectations. “That adds to the mental toughness, which correlates with that can-do spirit.”

That spirit was also mentioned by Jon Lee ’19, the third MarketAxess hire this year, who sat next to McVey during the company’s breakfast info session at DavisConnects

last September. Lee majored in economics with a minor in sociology and took two years away from Colby to serve in the South Korean military. Back on campus for his senior year, he said he has never taken a course with the same professor twice, determined to explore as much of the curriculum as possible—from art history to public speaking. And every class adds to his skill set, he said. “With every paper, there’s an argument, and being on many sides of that argument—I think that’s what really helps Colby students to be confident.”

A Colby education, he said, isn’t about sitting at a desk and taking notes. It’s about gaining the confidence to present to a class every week, framing and defending a position, absorbing a new subject. “You have to get scrappy,” Lee said.

He then paused to search for a better word to describe Colby students’ determination and confidence. But in the end, there wasn’t one. ©

## Where does data science fit into the Colby curriculum? Good question. A better question? Where doesn't it fit?

A new initiative, launched after months of intensive discussion and planning, will fold data science into a broad array of disciplines, from natural and social sciences to humanities. The multifaceted plan will enable the College to ready students not only to keep pace but to lead, as science, industry, and the arts increasingly turn to data-driven research and analysis.

Beyond the science and methods themselves, this initiative will also train students to ask the best questions—novel, useful, answerable—upon which data-science skills will be focused. “Data science is fundamentally about the creation of new knowledge,” said Provost and Dean of Faculty Margaret McFadden. “It begins with asking the right questions, which has always been at the heart of what we do.”

More than 30 members of the faculty have been involved in conceiving and planning the initiative. And just weeks after the faculty was asked for summer proposals to be supported through the initiative, professors submitted proposals ranging from building a digital database to study political humor in China to identifying galaxy mergers with machine learning.

Data science at Colby has been growing steadily, but the new initiative deliberately and dramatically amplifies its role in all subjects taught on Mayflower Hill. The initiative, made possible through a generous gift by Trustee Rick McVey P'12, '16, expands programs already begun in recent years.

McVey, founder and CEO of MarketAxess, a leading innovator in the electronic bond trading business, said the advancement in data science has been one of the big changes in the economy over the last five to 10 years. But he said the impact of data science goes far beyond financial markets. “I’m really happy that the [Colby] program is designed to be multidisciplinary, where it is really helping students be exposed to data science and analytics irrespective of what field they are pursuing,” McVey said. These students, he said, will be able to anticipate how data science will shape a discipline or career in the future.

The goal is to transform Colby’s curriculum not only to include all academic disciplines but to look to those departments to contribute to the development of appropriate data science tools. “I don’t care what discipline you’re working in,” said Professor of Computer Science Bruce Maxwell, “data science is going to impact the questions you can ask, the things that you can achieve.”

### To that end, as of January 2020, the initiative will:

- Offer the opportunity for academic departments to work with leaders of the data science initiative to increase the presence of data science in content in curricula.
- Award data science course development grants to faculty members. The grants are expected to result in as many as 30 new courses over the next five years.
- Allow Colby to offer a data science-focused course each Jan Plan with an instructor recruited from a partner organization.
- Support a series of one-credit courses, begun in Fall 2018 with Introduction to R (a programming language), for large groups of students to gain an introduction to data science tools and concepts.

The Colby Data Science Incubator will support complex, long-term research projects undertaken by students and faculty over two summers and one academic year. The goal is that the projects will result in external grant funding, publications, or commercial or academic research products, according to the initiative planners.

“These early investments provide the foundation for the College to consider a larger-scale program that would make Colby among the first liberal arts colleges to offer coursework and research opportunities in leading-edge fields such as artificial intelligence, machine learning, natural language processing, and advanced data visualization,” said President David A. Greene.

“The impact on these fields across multiple domains will be transformational.”

