The Lawyer, The Scientists and The Quest For The Grail

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VEROS™

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A small company launched in 2001 became a vital link to appraisal quality control for Fannie and Freddie. But that's not the end of the story.

Darius Borzorgi (left), Veros CEO and president, and Bijan Borzorgi (right), CFO and chairman, at the train station in Veros' headquarters city of Santa Ana, California

Convergence is the name of the game for successful businesses. Thoughts, ideas, concepts and plans converge at some point in time and space where positive outcomes are the result. Some companies succeed despite the non-convergence of crucial components in the early going; Apple Inc. comes immediately to mind, but even Apple figured out that execution needs both convergence and teamwork to bring a successful product to market. The maverick image of Apple's salad days may have worked for conceptualizing, but the real results took much more. Successful convergence often dislikes uniformity in the source components. In most cases, the minds behind the products come from widely varying backgrounds and perspectives. As author and speaker Stephen R. Covey observed, "Strength lies in differences, not in similarities." When Santa Ana, California-based Veros Real Estate Solutions came on the scene in 2001, it represented a convergence of spectacularly divergent business cultures, and the tale is revealing for its improbabilities. 11 Veros is a leader in predictive analytics, sophisticated automated valuation models (AVMs), valuation management software, and numerous other valuation and risk assessment tools.


Darius Borzorgi

The firm also is the technology provider for the government-sponsored enterprises' (GSEs') Uniform Collateral Data Portal® (UCDP), through which all appraisals flow on loans sold to Freddie Mac and Fannie Mae. This technology has been hailed as one of the most important developments in the history of the mortgage industry, and that's no exaggeration.

Data is king, according to the business mantra of the past decade.

Data may be emperor, not king

Data is king, according to the business mantra of the past decade. The concept of Big Data tells us that data sets have become so vast that they threaten to overwhelm longstanding means of dealing with information. With that notion comes the widely held assumption that using Big Data successfully requires big companies. Looking at the mortgage business, we are accustomed to giant companies that control the lion's share of their markets, whether in lending or data-oriented services. But does this also mean they are driving innovation? Not necessarily. As *Entrepreneur* magazine is fond of pointing out, large companies tend to lack the appetite for risk and innovation that form the core of startups and smaller firms.

"While startups beg, borrow and barter, large companies follow established processes, protocol and prices to accomplish the same things at a much slower speed and a heavy multiple of the cost," wrote venture capitalist Sam Hogg in the Nov. 15,2011, issue of *Entrepreneur*. These companies require innovative entrepreneurs, he noted-"and that typically isn't in a job description for a large company."

Real estate data is, of course, extremely important to the lending industry, particularly in terms of valuations. It is acquired and sold in huge volumes these days, and available through myriad sources—often leading to overlap, inconsistencies and imperfections that require special attention to accurately identify, validate and amend.

If data used to be king, it may now actually be emperor, dictating decisions overbroad business expanses albeit with decreasing effectiveness—leaving a situation ripe for innovations that bring more precision. The industry faced opposite circumstances in the year 2000, when rocket scientists, of all people, were poised to change life as we knew it in the real estate valuations world.

Darius and Bijan Borzorgi

Up to this point, appraisals had been anything but automated-more art than science. Data was available from several sources, but there was not enough of it, and what there was, certainly, was not of uniform consistency or accuracy. Automated valuations were in their first generation, and were quite simply derived. Property values were approximated by comparing recent nearby sales against the square footage of subject properties. Some factored in area appreciation trends. Many in the mortgage industry, and particularly those on the securitization side of things, were breathless at the possibility of eliminating the expensive and time-consuming Uniform Residential Appraisal Report (URAR), the longstanding Form 1004. Think about the appeal of an "electronic" variation on an appraisal that could be had in moments for a few dollars, versus a $350 (or more) URAR that took weeks to obtain? What's not to like?

Huge time and cost savings for securities issuers and in- vestment bankers were on the horizon if AVMs could only include photos, perhaps shot from omnipresent satellites, to show that the property was still standing and in acceptable condition. But AVMs were ultimately too varied in their results and unscientific in their design to do more than provide basic validation of full appraisals. Broker price opinions (BPOs) were pure local market inputs, but at least they included exterior photos and cost about one-third of the price of a URAR, so Wall Street loved them. But ultimately, AVMs would need more accuracy to become accepted.

Meanwhile, in the Windy City

Darius Bozorgi, destined to become the chief executive officer of Veros, was an attorney in Chicago, a civil litigator who felt like he was born for the courtroom. He was also a lifelong gadget geek, the sort of Dayton, Ohio, youth who liked to take things apart—complicated things. Bozorgi moved on to computers, learning the basics on the seminal machine of the age, the Radio Shack TRS, a basic box with a cassette-tape drive and limited capabilities other than to excite a generation of future techies.

In addition to technology, Bozorgi liked to argue. Not so much with the usual targets of teen arguments, like parents and peers; he liked the idea of arguing in court, especially given the influence of television dramas of the time, like L.A. Law. Defending the rights of the little guy was appealing, and when participating in high-school mock trials, he displayed a flair for it. These mock trials were presented before working lawyers and retired judges, and more than one advised him to pursue a legal career. Bozorgi went to the University of Michigan and later to Chicago's Illinois Institute of Technology's Kent College of Law for his education, culminating in his recruitment by a local law firm specializing in civil matters. The preparation was enjoyable, but the courtroom appearances-the arguments and presentations-were sublime.

After a number of successful years as a litigator, he found that as many as 95 percent of the cases he was as- signed to were settling before getting to the fun side of the business. "Litigators have a great job and provide a tremendous service to advocate for people and keep others honest, but the work outside of the courtroom became less satisfying," he recalls. "Doing all the preparation and then not being able to put it to use but 5 percent of the time got old." The technology bug began to bite once again. He was thinking of managed services, such as data centers-vast spaces full of advanced computers that solved problems.

Bijan Bozorgi, Darius' uncle and an electrical engineer with a highly entrepreneurial nature, helped the technology bug's bite take hold. Knowing that his nephew was up for a new challenge in a technology direction, Bijan persuaded him to visit Los Angeles, where he had assembled a group of rocket scientists. These weren't rocket scientists in the figurative sense, but authentic ones-mostly veterans of the mercurial Southern California aerospace industry.

As the discussion drilled down to the business problems that could be solved with probabilistics, predictive analytics and neural net technology tools, Darius was dazzled. "I got hooked on the science and the possibilities," he says. "I had to move out there and get to work."

And so he did, with his fiancé—packing lots of ideas and very little else. With Bijan as chief financial officer and chairman, and with Darius as president and CEO,Veros was launched in 2001. Its name was inspired by verisimilitude, the concept popularized by philosopher Karl Popper in the first half of the 20th century, which maintains that truth is the central goal of scientific inquiry. It seemed to him that the mortgage industry would benefit from the inquiries of talented scientists, but he did not want to evangelize a brand new product. Automated valuation models were past the evangelizing stage but were far from being mature and saturated.

The new Veros team felt they could bring in- novation and next-level technology to the emerging valuation tools and help redefine their roles. Lenders and Wall Street might have been looking for a new tool to replace the traditional appraisal, but Veros saw the AVMas an analytical tool for true, meaningful insight into valuation risk.

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Standing out (and up) from the crowd

Eric Fox, one of the rocket scientists in the group, traveled a very different road to Southern California. Now Veros' vice president of statistical and economic modeling, Fox grew up in New Castle, Indiana, a small town with a high school gymnasium that seated 9,300 people—eloquent testimony to the popularity of basketball In the Hoosier state.

At 6 feet 6 inches tall, by the time he was in the eighth grade, he was routinely picked early for neighborhood games, but his real interest was math. "I liked math growing up," he says, "and I kept waiting for it to get hard, even through my master's program at Purdue. It never really did." While tempted to stay for his doctorate in mathematics and statistics, Fox was eager to get out into the world and apply his skills. He was hired by Pratt & Whitney, the aero-engine giant based in East Hartford, Connecticut, and then was sent to West Palm Beach, Florida, where he took quickly to the warm winters.

Hired as a statistician, Fox tracked engine performance and probabilities associated with proposed redesigns and changes to avoid engine failures. It was important work and Fox stayed with it for 13years, rising to manage the statistics group in Florida, and later managing all of the groups throughout the country. (If you flew on an airliner between 1987 and 2000, the statistical chances that you benefited directly from Fox's work are extremely high.)

The job took him abroad, including to Chengdu, a city located in the Szechuan province of China, which was famous for two things: making very good turbine disks and being very short in stature. "People there took one look at me, towering a foot and a half taller than anyone else, and figured I had to be a celebrity," Fox remembers. "I signed a lot of autographs."

When Pratt & Whitney relocated his job to Connecticut, Fox elected to relocate someplace warm-Southern California, where a colleague had put him in touch with the group that became Veras. The climate suited him well, but the work was truly tailor-made for his skill set in probabilistics.

Fox spent the following few years creating the next generation of AVMs. "The AVMs that existed before Veras were designed by appraisers, with lots of appraising knowledge and little technology. Veros put appraisers together with the math and science guys, who brought very complex, aerospace industry-level modeling techniques to the table," Fox recalls. "The appraisers found wonder in the new approaches, and the scientists were amazed by the appraisers' depth and experience in the real world. We came to appreciate each other and the expertise we all brought to these new AVMs."

Unlike the caustic collision of old ways versus new science that Michael Lewis described in his book, *Moneyball*, Veros had an opposite experience. Veros had the leadership and the science, and in 2002 it hired the technology sales savvy to bring it to market. David Rasmussen was also a basketball player, but could rival in stature neither Eric Fox nor the other men in his family, who were 6 feet 4 inches. Rasmussen captained his high-school team in Tustin, California, the next town over from his offices at Veros, where he is senior vice president of operations.

He followed the generations-old family tradition of attending Brigham Young University in Provo, Utah, and learned about sales and finance in his family's New York Life insurance business. Finding his own technology muse, he studied for his Microsoft" Certified Solutions Expert (MCSE) certification on the side. He joined Tustin-based Solimar.net in 1999 as director of operations, where he wore a collection of hats in the small, pioneering AVM company. The company was bought the following year by Basis 100, the Canadian firm later acquired by Irvine, California-based CoreLogic. Rasmussen was not yet 30 years old and was a vice president with an up-and-coming firm on the ground floor of a new industry. He joined Veros in September 2002 as vice president of sales, later taking over operations as well.

Growing the culture

Veros' corporate culture was largely unformed in the early going, which gave it common ground with other entrepreneurial technology firms as its small team of a dozen or so sought to change the AVM landscape. Rasmussen brought perspective and experience to the effort, and immediately jumped into the competitive pool at the October 2002 Mortgage Bankers Association (MBA) Annual Convention in Chicago, using a repurposed exhibit booth and doing demos of Veras' new regional AVM.


Bijan Borzorgi

"We were a long shot," Rasmussen relates. "Without the resources of the large companies, we had to do a better job of training prospective clients on why the analytics were so important and made the real difference. Confidence scores, for example, were typically less-scientific afterthoughts in the AVM mainstream," he says. "Our analytics team created scores that correlated to the accuracy of the data and not simply the volume of the information. It was a very different approach, but the results proved out and were impressive."

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Veros' AVMs initially covered California, Arizona and Nevada, and adoption in those areas steadily increased. "We later went to 18 states, then nationwide as we gained the capital to obtain more data," Bozorgi says. "The difference was in the accuracy of the valuations." The company gained traction in 2003,when several major lenders recognized the accuracy of the Veros reports and moved them from lower spots in the ordering rotation to the top positions. Bozorgi published a white paper on the new generation of automated valuations, and Veros' detailed training events on AVMs and analytics morphed into an industry wide meeting known as the Predictive Methods Conference (PMC). This conference, still held periodically in Southern California, attracted top speakers and up to 500 senior industry attendees to discuss a broad variety of mortgage business issues in a forum environment.

Starting in 2007, Veros moved more into the systems side of the business.

Age of specialization

The AVM business got more specialized over time. Veros' constant additions and improvements to its flagship products in the Vero VALUE[sm] line epitomized the trend. Eric Fox and the rocket scientists communicated daily with the appraisers to find new permutations to pass by Rasmussen's customer-facing group, and the product offering list grew. It was notably a time when other AVM providers of Veros' size began to disappear, either exiting the crowded space or being acquired by bigger firms in the mid-2000s.

In the post-meltdown era, Veros created newly specialized AVMs that assisted in real estate—owned (REO) disposal with extensive listings of bank-owned and defaulting homes near the subject properties. The company also developed even more exacting confidence scores and sophisticated forecasting products.

Fox created the VeroFORECAST[sm] 24-month, forward-looking market forecast report, which goes down to the ZIP code level by price tier and property type. Since 2003, he has also prepared and issued quarterly updates that have proven accurate through the location- specific ups and downs of the gradual real estate recovery. Veros crafted and then refined its software platform for valuation management. The technology offers multiple ways for lenders to manage the flow and track the quality of valuations from the appraisal management companies (AMCs) and broker price opinion aggregators, as well as individual appraisers organized in a fee or staff panel, all compliantly through a cloud-based platform.

The company's VeroSCORE[sm] technology was also applied to these traditional valuation products, providing another dimension to understanding risk borne from Veros' signature scientific approach. With an extensive slate of innovative analytics, valuation products and testing tools, Veros could certainly claim to have achieved its founder's early goals of solving important problems for the industry. But the next project was perhaps the most important.

Mapping the mortgage genome

Human intervention in lending, for all of its virtues, brings with it the fault of errors caused by too many hands where fewer would be better. Paper processes, multiple information sources and manual data re-entry-all are places where things can go wrong.

Starting in 2007, Veros moved more into the systems side of the business, and was well positioned to respond when Fannie Mae was looking for help with its Loan Quality Initiative (LQI). Both Fannie and Freddie Mac were dealing with ways to improve and verify loan quality, and specifically were working on ways to get a pre-purchase look at appraisals. Fannie Mae called its initiative CDD, for Collateral Data Delivery, consisting of a delivery portal accessed via the Internet-and Fannie was looking for a technology partner to build it.

We're making great strides here with tools in valuation, predictive analytics, scoring and process management that can all interrelate in a way that makes sense for the client," Bozorgi adds.

The implications of the project were of historic proportions. The mortgage industry always has been subject to errors resulting from its process redundancies and sheer numbers of documents. The advent of loan origination software was very helpful in reducing the numbers of times information had to be input; many of the documents' fields could be populated by the automated uniform application.

Yet the appraisal, even with the addition of software, is fundamentally dependent on com- parable sales data for accuracy, and there are often hundreds or thousands of sales within a ZIP code area to be culled. By having appraisals in digital form to review against a rules-based set of analytics, the GSE could conduct extensive and detailed analysis within very short time frames. Under the proposed methodology, appraisals would be submitted electronically via an online portal at least 24 hours in advance of receiving the complete loan file through traditional means. If flags were raised, the agency could act on them before purchasing the loans, safeguarding the process and bringing new credibility to their portfolios. CDD represented the bow wave of a complete paradigm shift away from relying exclusively on representations and warranties and toward positive, definitive and tangible transparency for investors. The request for proposal (RFP) response involved what Bozorgi calls a "highly iterative process involving IT [information technology], developers, business-side people and project managers." The response process occupied six months of Veros' time and resources-a considerable amount for a company with only around 50 full-time employees."

This commitment would obviously have been a drop in the bucket for the big data firms," he notes, "but for us, responding to the RFP in the right way-the Veros way-was a huge project." It involved various Fannie Mae deadlines and steps that included site visits, demos of existing systems and other tasks.

In the Hollywood version of this story, there would have been a long, uncertain silence as the phone rang to convey the news that underdog Veros had come out on top in a *Rocky*-esque million-to-one shot. In fact, the event occurred with typical techie by-the-numbers informality, confetti-free and sans fireworks. But Veros had won the contract for CDD and now had to deliver, with predictably large reputational risk hanging in the balance.

Freddie Mac later issued a separate RFP and after conducting its own independent and highly iterative process, also decided on Veros as its technology provider. Shortly thereafter, the Federal Housing Finance Agency (FHFA) announced that the GSEs would cooperate to create a joint delivery portal, which became known as the Uniform Collateral Data Portal project. It was now under the auspices of the FHFA and was part of the game-changing Uniform Mortgage Data Program® (UMDP) umbrella initiative. It was also the first, most visible part of the project, with an aggressive schedule for the portal to be operational in June 2011, with mandated industry wide adoption in March 2012.

The Veros team, from Bozorgi on down, spent countless hours on the effort, and delivered on time and as promised. Veros continues to operate and maintain the UCDP, up and running successfully for the last 18months. Appraisal files are delivered to UCDP using the Uniform Appraisal Dataset (UAD), and loan files are ultimately delivered using the Uniform Loan Delivery Dataset (ULDD), currently in its second phase of adoption.

Additional initiatives are on the way with UMDP's expansion. The Uniform Mortgage Servicing Dataset (UMSD) and the Uniform Closing Dataset (UCD) are coming next year, completing the known digital initiatives of the UMDP. To appreciate its importance, think of this as mapping the mortgage genome, breaking down each of the thousands of elements of a loan file into parts that can be sliced, diced, verified and managed. It signals an end to the era when investors had to settle for less than full information and transparency when considering putting capital into the American mortgage securities market. Just as GSE forms became the standard for the industry in the 1970s, the UMDP becomes the *de facto* standard for the future, and Veros helped blaze the trail with its engineering of the collateral portal.

Charles Rumfola, who served as vice president, single-family during his 20-year career at Fannie Mae, was a key player in the GSE's Loan Quality Initiative. He now runs strategic initiatives at Veros and maintains the relationships with both GSEs. "I saw that Veros was really leading the charge in providing solutions that deliver much needed transparency, accountability and improved loan quality to the U.S. housing finance system," says Rumfola. "I wanted to play an integral role in continuing that vision."

The holy grail

There may be no Black Knight barring the way to the Holy Grail, but there is plenty of work to be done in valuation management systems, according to Bozorgi. "Systems that allow the collection of key data and provide users with the ability to truly analyze that data to their benefit-they are the holy grail of risk assessment," he says. "And it's an area in the industry that still has plenty of room to grow. We're making great strides here with tools in valuation, predictive analytics, scoring and process management that can all interrelate in a way that makes sense for the client," Bozorgi adds.

Just a dozen years since launching with a room full of rocket scientists, an engineering entrepreneur and an attorney, Veros has helped bring AVMs to a new level of sophistication, built the UCDP for the industry's largest investors, created a forecasting tool, made AVM compliance testing inexpensive and accessible, and brought innovations in valuation management software. But can a small company continue to prosper in a world increasingly dominated by very large companies?

"We've been profitable since we started, because of product superiority and by leveraging brilliant people," Bozorgi says. "If three guys in a garage can become Apple Computer, we can continue to grow and promote positive, lasting industry change with the ideas and resources at our command," he notes. "Just watch us.

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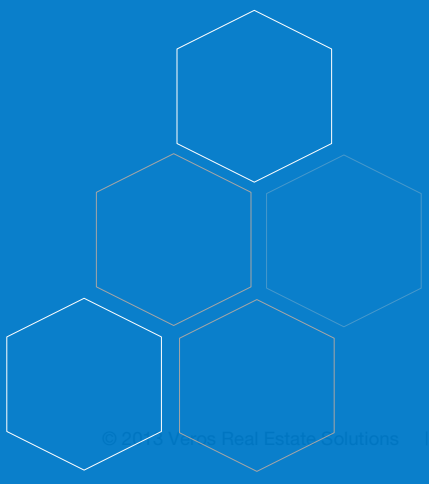

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