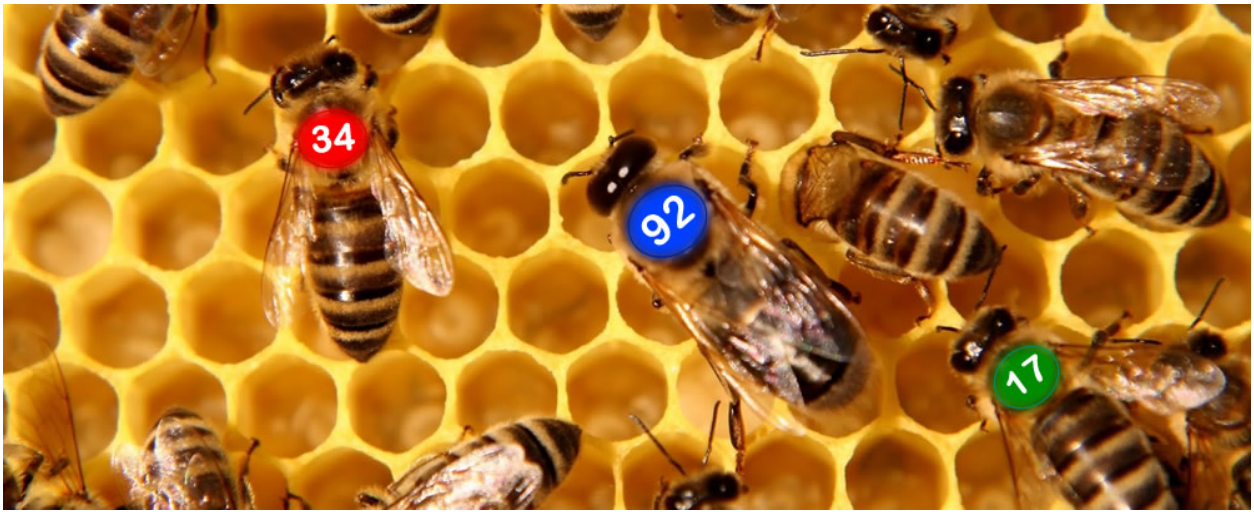
GLOBAL KEY ADVISORS

The Evolution of our Approach



Josh Schein discusses why he began using BIG DATA to seek actionable market information. The story may surprise you.

Although no one knows where it will lead or even how quickly, Big Data is altering our lives. My intent below is not to predict end results but to instead envisage how events may unfold while suggesting practical steps to consider along the way.

We stand increasingly poised to benefit from predictive analytics to a degree still little understood. Our tools have never been better and the data never more accessible. People skilled in the analytics are in short supply, however, while a more subtle but significant bottleneck arises because the time spent acquiring and applying these skills often precludes opportunities for closer exposure to unsolved problems. Whether emerging from quantitative or hands-on backgrounds, the future leaders in predictive analytics – the essence of Big Data – will be those who can bridge the gaps between the two sides.

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If information is today's life blood, a key corollary is that correctly perceiving what we see is not always simple. I first came to appreciate this keenly during college through experience gained on a project that later came to shape my career in unexpected ways. While pursuing an undergraduate degree at West Virginia University, an opportunity arose to spend a year as a research assistant under several scientists with Yale University on an NSF grant studying Asian honeybees in a Thai rainforest. By chance, their work had jumped to fame over a controversy involving yellow rain poison gas. The United States had accused the Soviet Union of promoting yellow rain in Southeast Asia, but eyewitness accounts proved unreliable whereas ground samples taken by these scientists showed anomalies such as pollen not consistent with chemical warfare. The residue thought to be yellow rain was in fact bee feces.

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For those desiring a primer, honeybees defecate en masse in flights around the hive typically lasting several minutes. The average bee has retained 20% of its body weight in ejecta for this moment. Although we had supposed group flights limited exposure to predators, a later study linked the behavior to a regulation of nest temperature. In either case, yellow rain and bee feces look alike. These scientists were able to envision and test the bee theory owing to the unusual skills and experiences they brought to the table.

My role on the project concerned not yellow rain but evolutionary biology with emphasis on foraging energetics, a consideration of the calories expended by bees in a variety of life activities that includes procuring food. The Asian species diverge from honeybees in Europe and the Americas starting with dramatic differences in body sizes so that studying energy spent acquiring food can be like comparing the fuel economies of a 747 to a Cessna. Our work involved months of marking individual bees to track comings and goings, timing bee dances to calibrate language variations among the Asian species, observing subsequent dances to plot natural foraging patterns in a rain forest, investigating honeybee body thermoregulation, tracking bees of a newly discovered species back to their nest (this took a week), and diving into untold related activities.

My main takeaway was a growing awareness of how seemingly mundane observations could be invaluable in the right hands. In retrospect, I was receiving an immersion course in best practices for collecting and considering data. Although a career in research was never my intent, it was a privilege to spend a year with exceptional scientists who took time to indoctrinate me into the nuances of their challenges.

Breaking into investment management some time later, I found myself in a different sort of jungle. As before, information was key, but the people pursuing it were different. Wall Street was a high-intensity sales culture. When considering "culture" in ethnic or socioeconomic terms, I

think we sometimes underestimate the impact of shared experiences unique to a vocation such as police work or teaching or art, or case in point, science vs Wall Street. We all know that outsiders can sometimes bring fresh views to a new profession. I began to intuit that the people around me – smart people moving real money – did not always invest in ways that made sense. My hunches were less a matter of disagreeing with specific actions and more about untangling logical inconsistencies underpinning career-long thought processes. I increasingly began to realize that some of these inconsistencies might be resolved by predictive data within grasp that no smart scientist would have ignored.

As an example, consider how you make investment decisions. At some point you will read or talk to others you trust for specific areas or perhaps for investing as a whole. Human beings do this naturally whether seeking advice on home carpentry or cooking or perhaps a work-related challenge. Worth considering, however, is a subtle but significant nuance about venturing into Wall Street terrain vs seeking advice in most other realms: investing brings you into circumstances where an overconcentration of keen talent is paid to outthink the person giving you advice. Before returning to this thought, however, let me state simply that you rely heavily on others when investing. Even if buying only index funds, you probably did not undertake the performance attribution analysis to figure it out – someone to whom you ceded intellectual authority steered you in that direction.

The larger question is where Wall Street turns for advice. Like you, financial people cannot evaluate all things at all times and need to follow others. Typically this means research analysts as well as colleagues within the same firm.

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I worked for three leading firms early in my career and was struck by a consistently entrenched mindset among colleagues at each that "we" hired better analysts and other personnel than competitors. Gradually I came to consider the logical improbability of every firm sporting the best talent, and gaining this early perspective proved invaluable. Surprisingly, valuable extensive data on analyst performance was published and available. Fortunately for me, others didn't recognize the value until much later. To me, the data bore similarities to my experiences with bees – messy with outliers, but usable.

These insights launched my Wall Street career. I developed and ran the InsideTrack® portfolios for nearly two decades at Citi Smith Barney (merged later into Morgan Stanley) around precisely these kinds of anomalies. The portfolios were offered primarily to corporate insiders diversified by industry who came to function as a brain trust. These insiders inspired further data-driven ideas for evaluating companies within niche areas, and this is where I began to work more closely with Robert Sigler. On the original question of evaluating individual analysts, we spent several thousand hours scrubbing data to run 50,000 Monte Carlo simulations on each and found only 2% with a 75% chance or higher of being "above average." This elite cohort, spread broadly across Wall Street, has over the past decade mostly migrated toward smaller firms, and interestingly, has not generally received top recognition or pay.

My career has been a constant search for untapped datasets with predictive value, a quest that has sometimes involved picking apart Wall Street's cultural blind spots per the above. I have come to collaborate closely with all manner of "quants," almost a subculture within Wall Street comprised mainly of people with advanced degrees in statistics and engineering focused on math-related challenges. These

are supposedly not people to share a beer with, although as our research head has noted wryly, this beer might have promoted sober thinking preventing the worst of 2008.

The quants tended to have minimal personal interaction with the client-facing side of the business, and for me, this was an opportunity. A key to my success, in retrospect, was to learn what quants and programmers actually did so as to bridge the gaps between us. My role became one of identifying and articulating the right problems and weighing priorities as we progressed through the technical challenges. I needed their help but could enhance their careers with industry insight which grew steadily stronger through what we were building.

I sometimes cringe at the term "Big Data" not only for its Orwellian implications but because it can connote aimlessness. I am convinced many organizations throw math and programming at a challenge without thinking through what they hope to accomplish. My colleagues at Global Key meanwhile think the larger players in Big Data are focused disproportionately on advertising and marketing with significant opportunities elsewhere being left on the table.

Interestingly, my occasional personal encounters with cutting edge peers in Big Data have been mostly with individuals in nonfinancial fields. Compelling data-driven work occurs in finance but is less common than one might suppose - I generally learn about it through the media, and the people featured are seldom analysts or others with traditional Wall Street backgrounds. When I've met successful data-driven peers outside of Wall Street, meanwhile, their experiences have mirrored my own. The best results have come from bridging gaps between those with quantitative skills those in the trenches tackling problems.

I once compared notes with an executive running online sales for a large retailer which had found several PhD's working together to be the optimal core structure for a team. Underneath would be tech support maintaining networks and databases while on top would be an industry veteran with the experience to realize that a nonsensical finding perhaps resulted from an overlooked holiday anomaly. This struck a chord, as my own smaller team structure had evolved similarly. In another conversation, a biotechnology professor running a university lab explained to me that quants and programmers drive his progress, but a two-day business trip often means returning to find they have "created a Frankenstein." His point, echoed in my personal experience, is that these endeavors require a surprising amount of sustained attention not only from quants and programmers but from the person with underlying domain knowledge.

If not already tapping into what predictive analytics can offer, where can you begin? Whether the goal is startup ideas or simply to incorporate new opportunities into a larger organization, I have three pieces of advice:

First, start with a team combining the hands-on industry knowledge with the best math and programming talent you can find. This will be core to all else that you do.

Second, consider working with academic institutions. You will benefit from the involvement of students savvy in statistics, engineering, and the latest in programming. These individuals are hungry for the real world experience you offer and will be appreciative and motivated.

Finally, have a road map, but move incrementally. You will make smaller mistakes. Along these lines, read Black Swan, a staid book mainly conveying that the best laid statistical analysis involving the doings of people nearly always gets blasted down by a large rock of unexpected origin. But take Black Swan

with a grain of salt. Although a large rock wiped out the dinosaurs, the joke on our team is that the dinosaurs arguably perished for having failed to acquire a key piece of information.

We live in a time of rare opportunity. Despite popular expectations to the contrary, Facebook and Google are not going to win the entire pie. Although the nature of our business at Global Key mostly precludes sharing our work, my hope in detailing these thoughts is to inspire others to embrace challenges they might not otherwise have considered while also giving readers a better sense of what we do. Take next steps, and you may be pleasantly surprised at the results.

Josh Schein is President of Global Key Advisors. Global Key Advisors is a full service financial advisory firm in San Francisco, CA and Las Vegas, NV serving individuals, families and institutional investors.