

Securities and Exchange Commission Historical Society
Interview with William O'Brien
Conducted on March 23, 2012 by James Stocker

JS: This is an interview with William O'Brien for the SEC Historical Society's virtual museum and archive of the history of financial regulation. I'm James Stocker. Today is March 23rd, 2012. We're talking today at Direct Edge headquarters in Jersey City, New Jersey. Mr. O'Brien, thanks very much for talking with us today.

WO: You're welcome, James.

JS: If you don't mind, tell me a little bit about your background. Where were you born and where did you grow up?

WO: I was born out in Long Island – Suffolk County. My father was actually a seat holder on the New York Stock Exchange.

JS: So you were exposed to the stock exchange as you grew up?

WO: Yes, at a very early age. Some of my earliest memories of the stock market are from my childhood when my father, who liked to do charts – he was a technical guy, a cyclist – and I would see him on Saturday mornings sitting with his legal pads, charting the daily activity of the stock market, and reams and reams of yellow pads. This is in the pre-Excel era. I started learning about what the tick was and the volume and the daily

moving averages. He worked for a variety of firms. The latter part of his career, he worked for Wagner Stott, which eventually became part of Bear Stearns.

He retired in 1982, and we moved to upstate New York, up in the Catskills, which I call our Green Acres move, because it was on a farm. He stayed active in the stock market. I remember in, I think it was 1982 – late '82, early '83 –he had one of those big satellite dishes installed in the hayfield in our backyard, because otherwise we only would have gotten three channels, ABC, NBC, and CBS. I remember him watching the precursor to CNBC, the old Financial News Network. I think he was trading Gulf Oil for a while in 1983, and doing pretty well. Even after he retired, he stayed active, and the stock market was always a big part of our home.

JS: Did he ever take you down to the trading floor when you were young?

WO: You know, he didn't.

JS: When you were young, while you were growing up, you obviously saw your father very much involved with securities and with the stock exchange. Did you imagine that you yourself might work in that business one day?

WO: Originally, I never thought of it, which is ironic given what's happened since then and because oftentimes, working on the floor was the family business. I still know people from my childhood who work on the floor to this very day. I had always had a different

path laid out for myself in my mind. I went to college. I did my undergraduate at the University of Notre Dame out in Indiana. I always had in my mind I was going to be a lawyer. I was going to go to law school. After I graduated Notre Dame, I went to law school straight away at the University of Pennsylvania Law School in Philadelphia.

JS: What did you study at Notre Dame?

WO: I was a government and a history major, so I took no business classes whatsoever. I was a double major, so any elective I had, I took history.

JS: In law school did you focus on securities law or business law?

WO: That's when I first started getting exposure to it. Very early in my law school career, I knew that I didn't want to be a litigator. I wanted to do some form of corporate law. But that's very broad, right? You don't really know what corporate law means when you're in law school because of the lack of practical training. But I did take a class in securities regulation my third year. That introduced me to what the '33 Act was, what the '34 Act was, et cetera.

JS: Did you do any internships while you were in law school?

WO: That's where I really started to make the connection. Typical to most law school experiences, your first real internship or working assignment is in the summer between

your second and third year of law school. I did my summer associateship, as they call it, with the law firm of Orrick, Herrington & Sutcliffe, which is in midtown. It's known as Orrick today. Over the course of that, I had a variety of assignments. A couple were for a partner named Sam Scott Miller.

Sam was a former general counsel of Paine Webber, and he had built up a practice at Orrick that focused exclusively on broker/dealer and securities market structure regulation. As I started to do some assignments with him as an intern, that's when the light bulb really went off. I thought, "Wow, this is a really cool combination of the stock market and the law" – and I knew pretty quickly what I wanted to do.

JS: After law school, you received an offer from the same firm, right?

WO: That's correct.

JS: Then you went there. Did you work on securities law only, or did you also work on other issues?

WO: Pretty much. Having had that light bulb gone off and knowing what I wanted to do, I took control of my own career. I went to Sam, who had a few other associates working for him, most of whom had had prior experience at the SEC. I said, "I would love to work for you, and I'd be honored if you gave me enough work that I could credibly tell anybody else who asked me to do anything, no, because I was too busy." I had a small

number of other assignments. I pretty much started working in this field from day one of my legal career.

JS: In the mid-1990s, the world of stock markets was a little bit different than it is now.

Were there any ECNs at that time?

WO: There were, and that was really where I first started to get introduced to the notion of electronic trading. One of Sam's biggest clients at the time was Instinet, which was the original electronic trading system. It really exploded and become a significant portion of overall volume in the stock market. Simultaneous with that growth was an increased amount of regulatory attention, and competitive attention from some of the legacy stock exchanges.

Over that period of time, '95, '96, '97, you saw a variety of proposals from not only the SEC – some of which culminated in the order handling rules that came out in late 1996, but also proposals from a variety of competitors, principally NASDAQ, about how to effectively restrict the ability of firms to try to trade on other electronic platforms. So by virtue of Instinet being a big client of ours, I wound up doing a lot of work with them, not just on the regulatory side, but on market structure policy analysis and advocacy, helping shape their input into the comment process on SEC and other rulemakings. I started to understand how markets work, and how electronic trading and the greater automation of the market was a drastic improvement, through those assignments.

JS: What did you think of the SEC process at this time? The comments process and things like that?

WO: I thought it was fairly deliberative. I think the history has borne that out. It's always been one that's very open to input. It's I think an unfair criticism to say that regulators are close-minded, or that you don't have a say in the process, when you really do get ample opportunity. How I learned about market structure was writing or drafting comment letters to the SEC on regulatory proposals. You approach it from the law school methodology of looking at the source material. Looking at the SEC Special Study from 1962. Looking at the dicta around the National Market System Amendments of 1975. What were they trying to do? By going through that comment process and making sure that our perspective was as informed and as backed by precedent as possible, it allowed you to learn. It's a great process, not just for getting your point across on the issue of the day, but if you do it thoughtfully, improving your knowledge of the market structure history, as well.

JS: The best way to learn it is to do it, right?

WO: Absolutely.

JS: You spent about three years there at Orrick, Herrington & Sutcliffe, and then you went to Goldman Sachs as an assistant general counsel.

WO: That's right.

JS: Would you mind telling me a little bit about how that transition came?

WO: I never thought of myself the true lawyer's lawyer. Most of my career has been about getting closer to the business. A natural evolution from a law firm is to go take a legal role at a client or a potential client. Goldman Sachs was then, and is to this day, one of the preeminent financial institutions on the planet. When the opportunity came to join that team, despite the great experience that I had at Orrick, it was logical for me to take it.

JS: What were some of the big issues that you were working on while you were there?

WO: My experience in Goldman rounded me out in a number of ways. One was getting closer to the business and the client, and not just giving isolated legal advice in a vacuum, but understanding how it affected clients in the "real world," and what the practical impact of your advice was going to be. It also rounded me out in expanding the types of matters that I was conversant in from a legal and regulatory perspective. At Goldman, I focused less on trading and more on some of the operational aspects behind trading. The prime brokerage unit, stock loan, equity and margin finance, operations, clearance and settlement. That gave me more of the back office piece, complementing some of the trading regulatory experience I had gained working at Orrick.

JS: Some of your work there had to do with electronic trading, as well?

WO: Less so. Of course, that was becoming a more and more automated process, too, but some of it was still manual. I was less involved in the front office trading aspects of it during that time.

JS: In the fall of 2000, you joined BRUT ECN, which was an electronic trading company, first as a general counsel, and then you moved up to chief operating officer. Tell me a little bit about how that came about.

WO: That goes back to my experience at Orrick, and Instinet being one of our biggest clients. Richard Schenkman, who had been the chief operating officer of Instinet for many years, joined BRUT in the spring of 2000 to become its chief executive officer, and it was being effectively spun out of the old BRASS order management system and run as an independent company for the first time.

JS: How long had it been in existence at that point?

WO: It had started in 1998 and Brut was an acronym, originally, for the BRASS Utility, all right? BRASS had become one of the predominant front-end execution management systems for the market making community, and in the wake of the SEC's order handling rules and Regulation ATS, you started to see a proliferation of several other competitors to Instinet, and BRUT was one of those. Another was STRIKE, which was a consortium of a backed ECN, principally operated by Bear Stearns. In 2000, the thought was to

combine the Brass Utility and STRIKE together to form BRUT and have it operate as an independent company with a broad consortium of market maker and other support.

Rich Schenkman was hired to run it, and he was building out his management team, and inquired to me as whether I would be interested in joining as general counsel. I was excited about getting involved in the trading aspects of it again, and also broadening out my experience and having legal responsibilities beyond just the regulatory and legal pieces to the entire company – HR intellectual property, contracts, et cetera.

JS: At this time, did you consider yourself to be someone that had a strong background in IT and other issues that are relevant to electronic trading?

WO: I started to get some of that in supporting the operations in custody and clearance settlements of Goldman, but not really. I wouldn't have considered myself a technologist at that time, by any stretch of the imagination.

JS: What were the major goals of the organization at that time? What was it trying to do?

WO: It was trying to have a fairly innovative business model that not only catered to the market making, but also tried to target the needs of institutions, as well. And the ability to move more of their trading electronically, while still preserving the traditional payment relationships they had with the brokers. One of the innovations of BRUT early on was the BRUT sponsorship model, which is effectively what now would be called a

commission-sharing arrangement – where you could trade electronically as an institution directly on BRUT's platform, but the larger majority of the commissions were then redistributed to the broker of your choice.

JS: Now, at this time, BRUT was a competitor to other organizations like NASDAQ, which was putting together its own product, SuperMontage. Tell me a little bit about the relationship between these different companies.

WO: It was quite adversarial. There was really an “us versus them” mentality, the “them”- being NASDAQ and the “us” being the Generation 1.0 ECNs that had evolved – and that runs the gamut from BRUT to Archipelago to Island, Bloomberg Tradebook, REDIBook, and Instinet. There were a couple of other ones that are relevant, but they were smaller at the time, like Attain, for example. There was still vibrant competition between those firms, but at the same time, there was a bit of camaraderie between the people at BRUT, and people like Matt Andresen and Will Sterling and Cameron Smith at Island, or Mike Cormack, Kevin O'Hara, and Jerry Putnam at Arca. All together, you know – competing against a common enemy.

JS: Many of these electronic trading networks saw NASDAQ as having an advantage, right, because it had this relationship with NASD at the time?

WO: NASDAQ had some rightly-deserved competitive advantages in that it had been around for twenty-five years prior to these other firms existing. It had a 100 percent share of the

market. It had been integrated very tightly into the daily lives of all the brokers that used it. But I think those brokers realized that on a long-term basis that was really suboptimal for their business models. The challenge was that NASDAQ at times, through certain proposals like SuperMontage, was trying to preserve those competitive advantages through regulation and market structure, and that's what a lot of people took issue with.

That's why there were these hosts of proposals that NASDAQ sponsored at the time – NACCESS, Next NASDAQ, iodes, nodes – and then iterations of SuperMontage that were looked at very critically. The New York Stock Exchange had its own advantages, too, at the time. It's just that that market was completely non-electronic at that point, and it was in many ways a second-order objective for the firms. That rapidly changed over the first few years.

JS: The SEC ended up as sort of an arbiter for many of these disputes, didn't it?

WO: Absolutely. I think it set a good framework baseline for competition between ATSs, ECNs, and exchanges, from a registration and a classification perspective. But how that fed through to the variety of exchange market structures took a while to play out, and the SEC was right in the thick of that.

JS: When did the possibility of the acquisition of BRUT by NASDAQ first come into play?

WO: There were a lot of relationships in play. Most people forget that BRUT, as the BRASS Utility, was founded by Bob Greifeld, the current CEO of NASDAQ, when he was the president of BRASS. In 2002, BRASS, which had subsequently been acquired by SunGard Data Systems, actually bought out all the other owners of BRUT in a roll-off transaction. Bob was the executive at SunGard, who was the sponsor of that transaction.

A few months later, in May 2003, he left SunGard to become NASDAQ's chief executive officer, a position he still holds until this day. A little over a year later, he inquired with SunGard about the prospect of acquiring BRUT. I think as part of his own vision for transforming NASDAQ, he saw in BRUT not only some market share, but technology, and even the broker dealer itself and how that would play into things like order routing to other exchanges. That precipitated the dialogue that led to that transaction, which I call "the company so nice, he bought it twice."

JS: In September 2004, NASDAQ acquired BRUT. How did they go about integrating BRUT's technology into their organization?

WO: It came over a period of a couple of years. A lot of the day-to-day operations of BRUT as a trading system were subsumed into the Transaction Services Division of NASDAQ, but BRUT and SuperMontage operated side by side for a period of a couple of years. Only after the subsequent acquisition by NASDAQ of Inet, which was the combination of Instinet and Island, was a project undertaken to merge BRUT, SuperMontage, and the Inet platform into what was called at the time a single book project.

JS: Relatively soon after the acquisition, you were promoted to senior vice president of the NASDAQ Market Data Distribution within the Data Products Division. What sorts of projects were you working on there?

WO: In my period of time at BRUT, I had made the transition from general counsel to the business side, where I was BRUT's chief operating officer for a couple of years. That happened at the time when SunGard acquired BRUT. Rich Schenkman and a lot of the other executives had left. It was a natural transition for me, given the interweaving of regulatory and legal issues and the business ramifications that we talked about earlier. While a lot of the employees of BRUT were subsumed in the Transaction Services Division, I wasn't. I took over the day to day of the market data distribution business.

That involved two principle responsibilities. One, overseeing NASDAQ's performance of the function of the SIP – the securities information processor – for market data in NASDAQ. That's market-wide. It is the plan pursuant to which, not only NASDAQ, but the other exchanges trading NASDAQ stock were feeding in the best quote and last-sale information for central redistribution to the brokers and vendors that consume it. That had been in a fairly contentious relationship. It was a proxy battle between some of the other ECNs and exchanges and NASDAQ. For a long time, when NASDAQ was 99 percent sure of the market, they ran that SIP in a dominant fashion. As the ECNs and the exchanges saw that as an inherent conflict of interests and a competitive issue, they started to apply a lot more scrutiny to NASDAQ's oversight of that relationship.

The other aspect of the job was building up NASDAQ's proprietary market data business, looking at market data as a content business and as a product and coming up with new ways to not only slice and dice that content in a way that was more meaningful to the trading community, but to show the value of that content to get broader distribution and monetization.

JS: Did you have any contact with the SEC during this period, or work on regulation issues at all?

WO: Absolutely. The management of the SIP is an SEC-approved national market system plan, and when we had our meetings amongst all the exchanges about planned governance and modification and operation, there was SEC attendance at every meeting. They were intimately involved with and concerned about making sure those plans were being operated fairly and judiciously. So quite a bit. Then with respect to market data, a lot of our product offerings were subject to rule filings. Part of the product rollout process often was getting SEC approval for those products.

JS: After about three years at NASDAQ, in August 2007, you joined Direct Edge as CEO. Tell me a little bit about the state of the company at that time.

WO: Direct Edge was founded on the remnants of the old Attain ECN, which I referenced earlier, which was in the first generation competition, really a fringe player that was

catering only to the day trading community, the old SOES bandits. In 2005, Knight Capital Group, the market maker, had bought the assets of Attain – off the scrap heap, if you will – and refreshed the technology and rebranded it as Direct Edge and ran it for a period of time as a product.

With the SEC's approval of Reg NMS and the cap on access fees and the exchange pricing, and the ECN pricing that evolved from that, a lot of wholesaling clients were starting to bifurcate their overflow, saying, "Market makers like Knight will pay me for my market orders, but ECNs and exchanges will pay me for my limit orders, because they are offering rebates." They would split their order flow and direct it accordingly, given the economic interests of doing so, and the other benefits it offered their customers.

Knight thought if they created their own ECN, their own limit order product, they could recapture some of the flow that was being lost to the other ECNs and exchanges. They had run it as a product, and they had had some modest success. It was a little less than one percent of the market. I think as NASDAQ and the NYSE were gobbling up all those Generation 1.0 ECNs, whether BRUT or Inet or ARCA, brokers realized that there needed to be more competition – that returning to the duopoly was not going to be optimal for them or for their customers.

Other ECNs were starting to gain critical mass and get broker investments, and I saw the opportunity to spin Direct Edge out as an independent company and do so through a consortium. They approached me about the prospect of running Direct Edge in that vein.

That had a lot of appeal to me. I really enjoyed my time in NASDAQ and being able to touch in a senior management role the trading, the data, and the listings businesses – I had spent about a year-and-a-half at NASDAQ running the new listings business in the United States. I also looked forward to the prospect of running a company, and in that context, the opportunity to work at Direct Edge was pretty exciting.

JS: How big was the company at the time when you joined?

WO: Remember, it wasn't really even a company at that point. It was a product. It was nineteen people. It was losing money on a stand-alone basis. It had no real independent infrastructure of any kind – no physical office, no dedicated website, no dedicated IT or financial infrastructure. As I said, while it was a going business, it was a little less than one percent of the market, and it was losing money.

JS: One of the first things you had to do is sort of put the house in order, get the office and handle everything for it?

WO: I thought that's what I was going to have to do. Because no one could really explain to me what Direct Edge was trying to do. I knew they had two systems – they had Edge X, they had Edge A. No one could really tell me the difference between the two, or why two systems even existed, as NASDAQ and others were trying to combine systems. I figured, I'm the BRUT guy – I know how to run an ECN, so I'll walk in there and just tell everybody what to do and right the ship.

What I found out was that strategically, they were moving exactly in the right direction – giving customers a greater diversity of product so we could be more things to more people. They had an innovative and customer-centric mindset at a time when a lot of our competitors were either focused on doing international acquisitions or trying to get one microsecond faster. All that needed to be done in terms of improving the framework of the company was communicating and selling the value proposition more extensively, branding it independently from Knight so there would be no concerns about conflicts of interest, and then putting the infrastructure around it to allow it to scale for growth. Those are things that I felt very comfortable with doing from my BRUT days.

JS: So the strategy was more or less already in place?

WO: Absolutely. I cannot take credit for our strategy, only helping to execute out it in a small way.

JS: What were the major challenges during these first couple of years, as you were setting it up?

WO: I think to start was just how quickly we grew. My first day at Direct Edge, we did 300 million shares for the first time. That was in July of 2007. By April 2009, we were peaking at almost 2.8 billion shares a day. That's 10x volume growth, and also 10x market share growth. By the spring of 2009, we had grown from less than 1 percent to

over 10 percent of the market. Making sure that you're preparing for the long-term future, but still having to deal with significant amounts of growth in the short term, was very exciting, but very challenging.

Every day, you start at zero shares traded, but you have to be prepared to do substantial amounts of volume. You can't close your shop down for six months to make the technology more scalable or make the code base better or have the billing infrastructure in place to support it. You have to be ready tomorrow. Your customers are depending on you. That was very exhilarating, but very hard work at the same time.

JS: Now, at this time, you did not yet have a license to operate as a stock exchange. How did you operate then?

WO: No, and we were navigating that very early. Within a few weeks of being at Direct Edge, I could have told you that one of our long-term objectives would be to become a stock exchange in our own right.

JS: Was this something that was known publicly?

WO: I think there was a lot of speculation that we would go that route, there was just a question about how. Because the previous experience was – we joked that NASDAQ was a stock exchange and it took them five years to get SEC approval to become one. I think what a lot of people didn't realize is that the SEC was parsing through some very

complex issues that NASDAQ-specific. The combination of NASDAQ and the old NASD – now FINRA, the over-the-counter trading facilities that were tightly interwoven with NASDAQ, and how to separate those out, and negotiations around that that weren't specific to potential new exchanges, none of which had gotten approved on an equities-exchange basis in a very long time.

I think the SEC had a very responsible mindset – that as we and other ECNs were becoming a material part of the market, it made sense to bring us within the panoply of exchange regulation. Originally, we had looked at potentially buying or merging with one of the smaller stock exchanges. Then in February of 2008, one of our competitors, BATS, had their formal exchange application published for comment by the SEC. We knew full well that an application was likely not to be published for comment if there wasn't at least some receptivity within the commission to approving it. It made me realize, wow, this is going to happen. We really can become an exchange.

JS: So even before you sent in your application for the license, you were already in contact with the SEC and making it known that you were –

WO: Absolutely. As early as late 2007, we began to explore with the SEC the prospect of evolving into an exchange.

JS: You filed the formal application in early 2009, I understand, right?

WO: That's right.

JS: You applied for two licenses. Why were two licenses necessary?

WO: One of the innovations that Direct Edge brought to the market is two trading systems, operated side by side and backed by a common infrastructure, but physically distinct. That created two different trading ecosystems that could give us a broader set of value propositions to the trading and investing community. Under SEC rules, you cannot operate two systems side by side that don't protect each other from a time priority perspective under one exchange license. So we were really innovative, and we were the first entity to ever apply for multiple exchange licenses simultaneously.

JS: Do you think that resulted in the process being more drawn out?

WO: I don't think so. I think it would have been more drawn out if we hadn't tried to do it that way, and I think we worked with the commission very early in acknowledging that we understood why it would need to be the way that it was. I think they appreciated that. The reason why we didn't file until 2009 was because in 2008, we did an intermediate transaction where we brought the ISE stock exchange into our investing consortium. We acquired some of the assets of the old ISE stock exchange.

The ISE investment brought our ownership consortium into compliance with SEC standards about the minimum ownership by brokers of exchanges. We had a lot of early

stage conversations with the SEC because Knight, Citadel and Goldman, which were our original investors, all owned more than 30 percent of Direct Edge. Under SEC rules, no broker was allowed to own 20 percent or more of an exchange, so we talked about ways we could potentially work out that issue. The ISE transaction gave us the opportunity to get them all diluted down to 19.9 percent each, which put us in complete compliance with those things and made the application process simpler.

JS: Tell me about the application process itself. What do you have to do? Basically get all the documents together, send them off and then wait, or is it an ongoing process of consultation?

WO: It was an ongoing process of consultation which starts way before you actually file the documents. Rightfully so, the SEC wants a fair amount of confidence that you're approaching a product of this nature with the right level of thoroughness and integrity. That requires developing a good working relationship. The management team of Direct Edge and its owners had had good working relationships through a variety of means, including their time at Direct Edge. I think that helped start the process off on a good foot.

There are a lot of questions that the SEC should rightfully ask of someone who is applying for the privilege of becoming a stock exchange. That's a process that takes time, and I think the SEC understands its special relationship with the stock exchanges

and the importance of a good working relationship that needs to start very early in a stock exchange's life.

JS: Was there ever any concern about which way the process might end up going, or did you feel pretty confident the whole time?

WO: I think we felt pretty confident. We knew that it was going to take a certain period of time. The approval of BATS in late 2008 gave us a fair amount of confidence of the precedent. We knew it was a matter of satisfying all of the requests for information and conditions. Then, it was just a matter of when, not if.

JS: Do other parties get a chance to comment on the application?

WO: They do.

JS: Did they comment?

WO: We got one comment in the process, which was from NASDAQ that was clearly pretty competitively motivated, and we responded to it. That was it.

JS: In March 2010, you finally got the two licenses. Were there any sort of technical changes that you needed to implement?

WO: For Direct Edge, becoming an exchange was not just a regulatory transformation, but a technology one as well. As part of our growth plan for the company, we had to completely redo our technology – not only our software, but the data center in which the technology resided and that our members would be connected to. When we went live as an exchange, we did so with brand new technology in a brand new, state of the art data center. Our new members were basically unplugging from an old system in an old location to a new system in a new location. It was converting from being an ECN to an exchange at the same time. That was a massive technology project in addition to the regulatory process we were going through.

JS: Was your technology center previously here in Jersey City?

WO: Yes, it was. It was actually in this building in 545 Washington Boulevard a couple of floors down in the data center that's currently run by Knight. Now we've moved to our own dedicated space in a data center run by a world class provider – Equinix – about seven miles away in Secaucus, New Jersey.

JS: You spoke a little bit about the technological challenges. Obviously, with this new stock exchange status, there were new regulatory challenges, too. Was it difficult to adjust to those?

WO: I think it was a process. There are always growing pains in processes like that. It is a fundamental change when you move from being an ECN to an exchange. Satisfying your

compliance obligations as an ECN is important, but when you become an exchange, compliance is an essential element to your success as a business. Not only are you effectively in the business of helping your members satisfy their compliance obligations and regulating them, but the regulatory responsibilities that you assume as an essential component of market structure are much greater. We spent a lot of time, not just when we became an exchange, but ever since, making sure we have the infrastructure in place, we have the resources dedicated to fulfill our obligations in a repeatable, sustainable, demonstrable, and adaptable manner.

JS: Do you have a separate dedicated compliance department here?

WO: We do. We have a twelve-person legal compliance team, and we rely on some pretty critical vendors. The regulation of our market surveillance function is conducted by the ISE in a partnership we have with them. Our member regulation is performed with the assistance of FINRA in a contractual arrangement we have with them. Our legal and compliance team interacts very closely with both those organizations to fulfill our responsibilities.

JS: I want to go back in time just a little bit and ask you about a couple of issues that Direct Edge, other electronic trading networks, and even regular stock exchanges have had to deal with over the past few years. One of those is the issue of dark pools or flash orders. First, would you mind telling me what that is? What is a dark pool or a flash order?

WO: A dark pool is something that has existed for a long time before it was even called that.

U.S. market structure has, as a component, the idea that you don't need to execute a trade on the exchange, if you don't want to. You can execute trades off exchange. A lot of retail and institutional investor orders are done that way for valid commercial and investor execution-quality-driven reasons. Now, over the last, say, ten years, the ways of executing those trades have become much more automated. If you are an institutional investor looking to sell or buy 500,000 shares of IBM, you wouldn't send that whole order into the exchange. You would suffer a significant amount of market impact and other things that would deteriorate the execution quality and the price you received.

What you would do, historically, is you'd call up an institutional sales trader at a brokerage firm, and just tell them maybe you had a part of that order. They would know that you probably had a little more, and they'd manually work out the best way to get that order executed. What's happened with the advent of technology is that all those processes have become automated. A lot of those old line sales traders are gone and you have these pools of liquidity now operating on a completely automated basis. Because the orders aren't displayed to anyone, they're dark, in contrast to exchange markets, which are called lit. So you have the "dark pool" phrase.

Dark pools always existed. They just became a lot more automated. What that did was, from our perspective, is create an opportunity to bring it into the exchange market. Our competitors tried to build their own dark pools and that didn't really work for a variety of

reasons, because institutions like using brokers for reasons that go far beyond just getting the order executed.

We thought, how do we use that automation as an opportunity to bring dark pools into the network of our exchange's liquidity in a way that made sense for the business models of our members who are operating those dark pools, and made sense for our other customers who now realize, "wow, there's all these other alternatives and I have to navigate these, I can't just ignore them." This would allow us to deliver value to both sides of the trade, which is what I think any good stock exchange is supposed to do.

We used a variety of technologies to facilitate that, basically building in access to dark pools into our smart order router. Sometimes we would route those orders to dark pools one at a time. Do you have an order? Can we trade with you? They'd respond, "yes, you traded with us." But at other times, we used technology to simultaneously reach out to all those dark pools at once, using technology that some people call a "flash order." We were simultaneously giving that information out to multiple dark pool operators and anybody else that was open to receiving it, and allowing them to execute with us.

That came under a lot of criticism from a couple of sources in the middle of 2009. Most of it came from our competitors. I think it is documented that a lot of our competitors said that they consciously stoked the issue, because they thought it was a significant driver of our growth, which it was in part. I think that's overstated. It was one product

that our customers found value in using. Of course, when the customers like what you're doing, you're going to grow.

JS: One source of this criticism was from the Congress, including from Charles Schumer, who was one of the people who was calling for the banning of flash pools and other types of pools, saying that they were creating an unfair market. This was the criticism, that it was creating a two-tiered market, right?

WO: Yes, criticisms did come from him. I never understand that two-tiered criticism, given how we use this technology, because we gave that flash order information to anybody who wanted it for free, whether you were a customer of ours or not. If you define one tier as everybody who wants it and the other tier as everybody who does not want it, it's hard for me to see how that is unfair.

JS: In any case, the SEC was concerned enough about it to open up an investigation into the issue. It's been going on for a couple of years now, as I understand it.

WO: To be clear – and I'll use commission-speak here – they never opened an investigation. They published a rule proposal to eliminate exchanges' and brokers' ability to use that technology. They have never acted on that.

JS: It's been almost three years. Do you expect that they'll do anything about that?

WO: No, I don't.

JS: Another issue that came up at least briefly in 2010 was that some exchanges started petitioning the SEC on the possibility of having sub-penny pricing of stocks. Do you still think that's a good idea?

WO: We never thought it was a good idea. If you look at that petition, it came from NASDAQ, the New York Stock Exchange and BATS. Direct Edge wasn't a party to that. We had some discussions with them about the concept, and we just didn't feel comfortable signing on. I think price improvement matters. If you're trading a million shares of stock, a tenth of a penny has an absolute value that you can't deny. But when I think about what the average investor cares about, they don't view a tenth of a penny as meaningful price improvement. What an average investor, an individual trading at home cares about is when they see a price on the screen and they want to sell or buy, they get that price instantly in the full size of their order.

For me, I care a lot more about size improvement. That was one of the things that our dark pool routing products, using flash and other technologies, was really meant to provide. It's one thing to say, "I get a tenth of a cent better on a hundred shares." But if you had a 5,000-share order, getting a tenth of a cent better on that hundred shares doesn't really matter if the other 4,900 shares either aren't filled or are filled at a worse price. It's more about when the best offer is 500 shares, getting a customer a 2,000- or 5,000- or 10,000-share fill at that price. We think if size improvement is focused on a lot

less than it should be, and that de minimis price improvement is, in the grand scheme of things, probably not a productive development for market structure.

JS: Another rather controversial issue over the last seven or eight years or so is the issue of naked short selling. Is that an issue that concerns Direct Edge at all?

WO: It has always been illegal, and it should be. Having had background in stock loan, a principle tenet of selling security short is that you have to locate and be confident you're going to be available to deliver the securities on settlement date. That was increasingly not the case in some securities. I think that the focus to heighten the penalties and the accountability for failing to deliver was appropriate, and I think it has really worked.

JS: In May 2010, just a couple of months after Direct Edge started operating as a stock exchange –

WO: Actually, a couple months before. We started in July. We got approved in March 2010, but we started operating as an exchange in July 2010.

JS: Were you watching the events that happened on the stock market on May 6th?

WO: Of course I was.

JS: Tell me a little bit about how that looked from your perspective.

WO: I was overseas at the time, believe it or not, and so I was in an airport getting ready to fly back to the United States on May 6th, when the market dropped from 300 points down to 900 points down in a couple of seconds, and then whipped back. First, I wanted to make sure that our systems were operating properly, and our systems operated pretty flawlessly that day. But then, after the market closed and we started getting back reports of all these erroneous trades and stocks trading at a penny, you realized it was a major problem and an area that was going to draw significant scrutiny going forward.

We had done a lot to apply the benefits of technology and competition to the markets, and had made the experience of investors a lot better. What we hadn't spent the time to focus on was some of those old utility functions that exchanges perform and how to apply technology to those functions. One of those utility functions is, when should the stock market close, either for any individual stock or market wide, because of fundamental or non-fundamental factors? Because we hadn't put the time into that issue, when a day like May 6th came, even though our market, from a technology basis, operated flawlessly, the market as a whole, of which we're an important part, operated very poorly. It was a real embarrassment.

JS: From your perspective, have adequate steps been taken to address possible future recurrences?

WO: I think so. People ask me, can another flash crash happen today? The answer, to me, is undoubtedly, it cannot. The circuit breakers that were put in place – quickly once the right focus was there – really prevent the worst types of abuses that occur on the flash crash from occurring. You know, a stock simply cannot go from forty dollars one second to a penny the next to thirty-nine dollars the next. Most people realize that. Other people have technology and have spent time hiring twenty-five PhDs. I don't think they think it's unfair that if they spend less time and resources, there's going to be different trading experiences behind that.

I think all investors have the expectation that every time they trade, they are going to get a rational outcome. It may not be the best outcome possible, but they want a rational outcome. What happened on May 6th wasn't rational, and the possibility of those types of events has been eliminated since then.

JS: We've talked about the past. Now let's talk a bit about the present. Direct Edge has had a lot of success over the last five years. You've opened two exchanges up in the United States, and now you're working on opening up an exchange in Brazil.

WO: Yes. We're really excited about the product, while knowing full well that it is going to require extensive coordination with the Brazilian securities regulator, the CVM, as they parse the issues that come from bringing competition to the local market. Right now, there's one monopoly for the trading of stocks in Brazil, BM&F Bovespa.

JS: How does the regulatory process of Brazil compare to the process of the United States?
Are they similar?

WO: The framework is very healthy, and the regulator is, again, a very thoughtful one. There is a framework for exchange competition in Brazil. Their version of Reg NMS is what's called Instruction 461. It contemplates the notion of multiple exchanges competing with one another. The regulator is very thoughtful in wanting to get right all the operational and market structure issues, while still trying to compress that process.

As opposed to the period of time going from the order-handling rules to Reg ATS to Reg NMS, I think the Brazilian regulator, CVM, wants to compress that period quite a bit. They have been very open to developing a healthy relationship with us early in the process. Within a few months of us being interested in Brazil, we started a dialogue with the CVM right up to the most senior levels about how we can introduce competition to that market in a respectful, responsible manner.

JS: Do you think that they look at the United States as a model of market regulation, or is it difficult to say from your perspective?

WO: I think they are very international in their mindset. They look at the U.S. as an input in what can be done better or worse. But it's one input. They also look to the European, even to the Australian and the Canadian experiences. There are certain areas where Brazil is already a world leader. The notion of the beneficial owner of a trade being

known right through to the clearing settlement process, as opposed to things being held in record or street name in the United States where the U.S. is in some ways playing catch-up with proposals like the consolidated audit trail and large trader reporting.

Brazil is a world leader there. They aren't looking to copy anybody wholesale, but they are looking at a variety of inputs about how to preserve what's good about the Brazilian market structure and then leverage some of the benefits of competition at the same time.

JS: Is there a target date in mind for when you think the process might get through, or is it difficult to tell?

WO: I think the target date is when the regulator is ready. We are very respectful of the process they need to go through. When we announced our intention to enter Brazil, we said we were hopeful of trading by the end of 2012. It will likely be at some point beyond that. We don't see any value in trying to force timetables. We want to compete as a respectful, responsible member of the marketplace. That requires working with the regulators and with other market participants on a timetable that makes sense for them. We're committed to doing that.

JS: Any plans for markets in countries other than Brazil?

WO: Right now we have made no announcements like that, but I'd say that we feel like we are just getting started. We like focusing on places where we can deliver incremental value

and improve the business lives of our customers and the financial lives of their customers' investors. We have never been about trying to do ten different things at once. I feel like if we continue to deliver on our value properly throughout the United States, and we expand successfully in Brazil, there'll be other opportunities for us to get everybody their Edge.

JS: Are there other big plans that you have right now that you'd like to talk about a little bit?

WO: We've been doing a lot in the United States, not just on the trading side, but leveraging out the infrastructure we have built as an exchange with respect to connectivity in our own proprietary market data business. We just launched a historical cloud-based market data product, EdgeBook Cloud, where not only brokers, but any investor on the planet can get a replay of the trading information in our system or for a full day or for a small period of time. We'll be rolling out a variety of proprietary market data products that we think will cater to retail and institutional investors over the coming quarters. With our new world class data center, we will be leveraging the infrastructure that we need to have as an exchange to help our members trade more efficiently market wide.

JS: Mr. O'Brien, do you have any final thoughts before we wrap up today?

WO: I would say this. I'm really honored to be the CEO of a stock exchange and work with the SEC on making sure that our markets serve the needs of our nation's investors. I have always felt like exchanges are one of the original social networks. People

connected to Facebook for a variety of different reasons, but all for a common purpose – to advance their lives forward. The same holds true for stock exchanges. Whether you're a retail broker or proprietary trader or an institutional firm, you're all connecting into an exchange for a variety of reasons, but it's all for a common purpose. Not only to advance your business life forward, but to advance the financial lives and objectives of your customers.

We play a critical role. It's a very challenging business, but a very rewarding one. I view the SEC as a vital partner in that, and while they regulate us, I find it works best when it works collaboratively, and they are very open to doing that. It's an honor to work with the SEC every day.

JS: That's a good thought to end on. Bill O'Brien, thank you very much for your time.

WO: Thank you.

[End of Interview]