

## **June 1, 2018 Annual Program: Regulation and Market Structure from ATS to NMS**

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Dan Goelzer: Good afternoon, welcome to the 19th Annual Meeting of the Securities and Exchange Commission Historical Society, and to today's program, Regulation and Market Structures from ATS to NMS.

I'm Dan Goelzer, I am the chair of the society's Board of Trustees and on behalf of the trustees I'd to thank everyone, those here in the room, as well as those listening on the live webcast, for joining us today.

In a few minutes our distinguished panel will be discussing the evolution of our nation's securities markets during the decade from the mid-1990's to the mid-2000's. But before we begin the program, I'd like to say a few words about the Historical Society.

The SEC Historical Society's mission is to preserve and advance knowledge of the history of financial regulation. We accomplish that mission through our virtual museum and archive, which you can access at [www.SECHistorical.org](http://www.SECHistorical.org). The virtual museum includes galleries devoted to specific topics, papers, oral histories, archived webcasts of programs like the one we're having today, photos, and other materials that chronicle the development of our nation's securities markets and of financial regulation over the years. Today's program is part of the construction of a new gallery devoted to securities market structure that will be opening in December of this year.

Unlike a physical museum, the Society's virtual museum has a collection that's always available 24 hours a day, free of charge, to anyone anywhere in the world with internet access. If you haven't already done so, I urge everyone here in the room and everyone listening to the webcast to visit the virtual museum. I'm sure you'll find it useful and informative, and maybe even entertaining in some ways. Whether a student, a professor, a researcher, a practitioner, a regulator or just someone who's curious about the financial markets and how they came to be the way that they are, please take a tour of the museum.

I should stress that the SEC Historical Society isn't affiliated with the Securities and Exchange Commission. We're an independent nonprofit organization and we depend on donations from individuals and organizations that support our mission. However, despite the fact that we aren't affiliated with the SEC, much of the museum's focus is on the extraordinary men and women who served at the commission over the last eight decades.

The virtual museum includes 228 oral histories, many of them with former commissioners and staff members. These interviews I think provide remarkable insight, unavailable anywhere else, into the challenges of those that worked at the agency over the years have faced, and how they met those challenges, and into their successes, and occasionally their setbacks in doing so. Many

of the stories that you'll hear in the oral histories have resonates for issues that the Commission is dealing with today, so I hope you'll sample them.

Each year the society holds an event like this one in early June to mark the passage on June 3, 1934 of the Securities Exchange Act. The 34 Act of course created the Securities and Exchange Commission and transferred responsibility for administering the original piece of securities regulation, the Securities Act of 1933 to the new SEC.

As is our tradition to commemorate the Commission's 84th Birthday, please join us after the program for ice cream in the lobby. On the subject of SEC birthdays, next year will mark the 85th anniversary of the Commission's birth. As we've done for milestones like that in the past, the Society is planning to have a special commemorative program next year and also a dinner. So, please mark your calendars for the afternoon and evening of Monday, June 3, 2019 and stay tuned for additional details about that event.

Before turning to our market structure panel, I want to thank the Commission and staff for once again hosting this annual event here at the SEC. In particular we're honored that Commission Hester Peirce is here with us on behalf of the Commission, has agreed to share some remarks. Prior to her swearing in this January, Commission Peirce was a Senior Research Fellow and Director of the Financial Markets Working Group at the Mercatus Center at George Mason University. She previously worked on Senator Richard Shelby's Senate Banking Committee staff, and prior to that as council for SEC Commissioner Paul Atkins and as a staff attorney in the division of Investment Management. Commissioner Peirce earned her BA in Economics at Case Western Reserve University and her JD from Yale University.

Commissioner, thank you again for taking the time to be with us today and let me turn the podium over to you.

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Hester Peirce: Thanks Dan and thanks to all of you for being here today. And it's really an honor to be here to welcome you to this event. I think it will be an excellent event. Financial regulation is, in itself, fascinating but I think looking at the history makes it even more fascinating. And today we have the best panel that you could imagine to talk about market structure issues. So, I'm very much looking forward to their discussion.

I think to really understand ATS and NMS, you need to go back even further and need to go back to the 75 Act Amendment. And I've had the privilege of looking into the SEC Historical Society archives for information about how we got to where we are today. And among other things, I ran across an interview with Roberta Karmel who actually is here with us today, so I got her permission to quote from that interview. And this is what she said at the time.

She was here when the 75 Act Amendments had been passed, and the SEC was trying to figure out what exactly to do with this mandate. So, she says, she remembers having a rather strange conversation one day with the Head of the Enforcement Division at the SEC, Stanley Sporkin who said, Roberta, I don't know what we're going to do about this National Market System. He

said I think we should establish some sort of government agency like ComStat that should build the National Market System. And Roberta responded, Stanley and then what? Shoot it into space?

I believe that market structure, this is again Roberta Karmel speaking, she says I believe market structure had to come from the industry, the government could not dictate what the market should be, even if that was good policy, which I did not think it was, the government couldn't do it.

And I have to say that I find some comfort in those remarks, because now sitting here today and looking at National Market Structure and all of the rules that we have to support it, I find myself asking that question again and wondering whether we should shoot it into space and start all over again.

But in any event, we're going to hear today from people who know a tremendous amount about a key part of the history. And I look forward to that discussion. And it's being moderated by Kenneth Durr who is a graduate of Kent State in the great state of Ohio. He got his master's and Doctorate from American University. He's now the Vice President of History Services at History Associates. He oversees the production of books online histories and oral history program.

And I will say that even though I've not met him, I feel that I know him personally because I've listened to so many hours of his interviews on the SEC Historical Society's website. He just does a fantastic job at drawing people out, drawing people's stories out, putting things in context. So, I just want to thank you for the work that you've done. I know that I personally have benefitted and I'm sure that many others have as well. So, thank you very much, and look forward to the discussion.

Ken Durr: Thank you very much. Thanks very much Commissioner Peirce. I appreciate that. Our mission today is to explore the development of, and the regulation of, the equities markets during the pivotal years between Regulation ATS and Reg NMS.

And to do that it's my honor to introduce three former directors of the SEC's Division of Trading and Markets. Richard G. Ketchum was Director from 1984 to 1990. Dr. Richard R. Lindsey was Director from 1995 to 1998. And Commissioner Annette Nazareth was Director from 1999 to 2005.

So, we're going to put all of that institutional and personal knowledge to work by talking a little bit about not only that period from ATS to NMS, but we're going to go back to the... set the baseline a little bit too. And Rick I'm going to throw it down to you to talk a little bit about the 75 Act Amendments and how we emerged from that. How the Commission emerged from that. And we started moving in the direction of actually realizing that mandate.

Rick Ketchum: Sure, thanks Ken, and great to see those of my colleagues in the audience. Okay this is sort of the first 15 years of National Market System in five minutes whether you're ready or not.

The first thing to understand is that obviously the 75 Act Amendments and the particular part that we'll talk about today which is Section 11(a) were not simple. Congress set forth a variety of objectives, some of which were contradictory, some of which were... there were broad consensus of such as increased transparency and increasing the economic and efficient execution of transactions, and then a range of things that were in the eye of the beholder from the standpoint of encouraging competition, and at the same time encouraging that competition while at the same time enhancing interaction of orders. And we'll hear over periods of decades the Commission's struggle in meeting particularly those two desirable ends which often aren't simple.

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I think that to understand the Commission's first 15 years in this, I think you first have to step back, completely forget everything that you know about existing markets. And remember what markets looked like in 1975 and really pretty much looked like in 1990. Because effective you were an environment in '75 in which there were two types of market structures. The first was an exchange market structure, completely dominated by the New York Stock Exchange, except for small listed securities which was completely dominated by the American Stock Exchange. Much of the fragmentation that had occurred earlier because of fixed commissions disappeared. And New York had the vast majority of the order flow.

In addition, this was a very manually intensive environment. Most of the trading occurred in New York, much of it was face to face. To the extent there was any electronic order flow, from the standpoint of small orders, it was done, sent to a printer. And again, even up to 1987, it was sent to pretty much the very same printers.

On the Nasdaq market side, you had an environment that was purely telephone by telephone trading in which market makers put out quotes. And in early times in which those who would advise retail investors didn't even have access to anything besides a summary of those quotations. And I guess the last piece is that while Congress and the Commission saw the enormous potential that has occurred from the standpoint of technology, this was a very different environment with technology. A time when business continuity plans was a nice theory in business schools, but not actually implemented by very many people managing computer systems. And while the ability to build an electronic system that would pull all order flow together was possible, the risks involved in that were very significant.

So, what did the Commission do during that time? Let's talk about it in three pieces. The first piece is the exchange market environment, where the Commission tried to take a variety of what I'll call building block steps that started even before the 75 Act Amendments but completed afterwards in respect to creating a consolidated transaction reporting system. Remembering at this point people pretty much outside of traders had only access to primary market or New York Stock Exchange information.

It moved to that to a consolidated quotation system that ensured a best fit and offer would be available from all the market places. That set of rulemaking also put in place a requirement that

firms that market makers putting out quotes had to be firm for those quotes, something that I'm sure we'll return to, and that drove a variety of SEC actions down the road.

And the third piece, again recognizing that even when the information was there, people chose to only look at the primary market information, was a vendor display rule that again tried to ensure that that information was available in a variety of places.

The next step was building a rudimentary linkage system, fundamentally a compromise because of the risk of building fully electronic systems, called the Intermarket Trading System, or ITS. And combining that over time with a price protection rule, generally referred to as trade through rules, that basically ensured that participants in one marketplace could not ignore, at least completely ignore, a better quote in another marketplace.

Now the way ITS worked is very different than what you use today with respect to automatic executions. ITS essentially resulted in an order being sent, let's say to the New York Stock Exchange from the Pacific Stock Exchange, and then a requirement that they respond to that order in somewhat short of a lifetime, but usually a minute. And raising a variety of challenges with respect to that.

But if you will, the simplest thing to understand is the minimal impact from a competitive standpoint is, it always allowed the receiving market to better the price. And in most circumstances when you're allowed to better the price you will, and though the ability really attract the order flow was limited.

Now that did result in the first competitive breakthrough which was regional exchange is being able to provide automatic execution systems for small customer orders. Again, something that will appear down the road.

Second piece was Nasdaq. Nasdaq in the late '70s and early '80s was unrecognizable from the standpoint that a pure telephone marketplace in which the information to advisors for retail investors included an average of the quotes--you actually didn't get to find out what the best quote was. So, over a period of time, the Commission took steps to require last sale reporting in Nasdaq securities. It didn't exist before. Required that the best bid and offer be available to retail advisors. And then steadily over time took steps in something called the Manning Decision and Actions afterwards to restrict the ability for market makers to trade in front of their customers.

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The last piece that came after the crash of '87 was the SOES system. Nasdaq's effort to deal with the backing away or problems that occurred during the crash. That provided an automatic execution system that we'll talk about in later chapters, resulted in some interesting opportunities for day traders and momentum traders.

The last piece I'll mention and shut up, is that probably the most significant thing the Commission did in that time, yet it didn't seem that at the time, was in fact that it allowed alternative market structures to develop with the Cincinnati Stock Exchange which operated

composite limit order book with respect to Instinet which gradually evolved from an institutional forth market system into an effective composite limit order book as well.

And probably the most important thing the Commission did that it set a great deal of what Rich will talk next about is that it allowed systems like Instinet, not to register as exchanges, but to operate as broker-dealers. A very messy way of encouraging competition, but basically the only way of doing it at a time when the Commission had very little exemptive authority. Ken I'll stop there.

Ken: That was a wonderful five-minute tutorial. Thanks. Any of our other participants want to add anything to that context?

Annette Nazareth: No, it just sounds like it's so ancient. I was going to ask if everybody walked a mile to get to the exchange, in the snow, I mean, uphill both ways.

Rick: No but we did walk the mile to Kelly's to draw a variety of things. And it should be noted, in that varied time, speaking of Kelly's where most of these things were designed, the Commission requested comment on all the things in one way or another that were later done. Requested comment on things like a composite limit order book, order by order routing, an order display rule of the removal of off-board trading deed approved... proposed from the standpoint of removal of off-board trading restrictions.

So, the issues were there. The challenges were the lack of support for the reasons Commissioner Peirce properly recognized in her opening remarks. And the risks involved in a fully electronic system at the time.

Ken: As a historian, one of the things that I'm always interested in is the role, and not just of how one thing led to another, but the role of chance. And we had this little thing that occurred called the Odd Eighths Scandal, which kind of blew Nasdaq apart a little bit. And had a big influence on the way the National Market System was developed, and also on the regulation. And Rich you were in the seat when this happened, can you tell us a little bit about that?

Rich Lindsey: Sure. To just broaden out a little bit of what Rick said a moment ago. There was this... so I want to capture two things. One was the Manning Rule which was mentioned. What you should understand is the Manning Rule was actually the result of a lawsuit that was brought against Nasdaq market makers because they were trading ahead of their customer orders.

The second thing is that for decades people that talked about the competitive dealer system for Nasdaq market makers, which turns out wasn't really particularly competitive, because while, as the Nasdaq electronic connections developed they didn't actually have to trade with each other. They just posted their quotes. So, if you were a customer, even after the Manning Rule and you wanted to trade at the best price in the market, you would submit it to whichever market maker that you were doing business with. But it may never ever get executed, because it didn't get routed to any other market maker, it got held by the market maker that you sent it to begin with.

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And I want to underscore, we can talk about the history, but I want to also talk a little bit about the logic and why certain things happened. One of those is that intermediaries like to hold order flow. They like to control the order flow. And that's even true today. And a lot of what we were doing during the intervening time periods we're going to talk about was to try to make order flow more accessible and more competitive. Market makers like to control order flow because if they can segment it, and they can say okay these orders are from, I'll call it uninformed investors, and these other orders are informed investors, if I can dump the informed investors someplace else and trade with the uninformed investors, then I can actually make more money.

So, to get rid of that kind of asymmetric component that might be embedded in order flow, people liked to push away certain types of orders. And the SOES system brought that about. But what also happened, and I'll come back to SOES in a moment, what also happened was the Odd-Eighths scandal that was mentioned. And in this, what market makers, it was actually a two-level pricing convention, but we don't need to get involved in the details, but essentially market makers avoided the odd eighth. So, they quoted only the even eights, so zero, a quarter, a half, skipping the odd eighths.

that the avoidance of odd-eighths was actually a mechanism of let's say tacit collusion, and was enforced within the market making community. If somebody broke that convention they were called, berated, threatened, and pressured in other ways. That brought about both the SEC Enforcement Action, the 21(a) against the Nasdaq market, but it also brought about the Justice Department action against the Nasdaq market makers to try to resolve and break the pricing convention. The pricing convention could be supported from an economic standpoint – generally, one would say you that can't support collusion because there's always an incentive for somebody to break the convention. And just getting berated and sworn at on the telephone may not be enough to make you to continue to follow the convention. The reason it could support itself was the fact that there was an entity in the market known as Instinet.

In Instinet, which at the time billed itself as a crossing network for for institutions, was about 80 percent Nasdaq market makers, crossing with each other. And if you combined the order flow that was in Instinet, Nasdaq market maker order flow, with the Nasdaq order flow displayed in the Nasdaq market, you actually didn't have an avoidance of odd eighths.

So, market makers could support the pricing convention by trading in the odd eighths in Instinet. And while Instinet was admittedly blind as to who was on the other side of any trade, it turns out it was mostly Nasdaq market makers. So, that sets part of the stage for what the Commission felt that it needed to fix at that point in time.

Ken: Do you want to jump in Annette?

Annette: I was going to say, what I find compelling about this is that the 11(a) objectives were so instrumental in being able to address these issues. I mean even if you had situations that didn't involve fraud, the fact of the matter is... I mean today we so take for granted price transparency, and then when Rick is talking about forcing exchanges to show their best prices, this was not

something that, needless to say, they were inclined to do. I mean there is a tremendous value as Rick mentioned in sort of keeping these orders and this information to yourself.

And so, having these National Market System authorities that say that the Commission has authority to further price transparency, that it has the ability to further these notions of economically efficient execution of orders, I mean that is where the ability and the sort of laser focus on these issues that I think has made our market so strong really, originated from, just to put it in that context.

Rick: Yeah, I was just going to say briefly, I think Rich summarized this perfectly. I mean the incentives for wider spreads in a Nasdaq market were artificial in a variety of ways. It also was impacting the fact that all retail orders were executed by the market making... in the market making community, either internalizing their own order flow, or with respect to contracts we received from that standpoint. So, it certainly worked better if the spreads were a quarter or a half as opposed to an eighth, much less these days a penny.

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The other piece that I think played in this Rich referred to, is the frustration that existed that is difficult to necessarily fully capture today over the SOES momentum trading. SOES was initially developed as a retail system, but was early on discovered as a remarkably good momentum trading, a day trading system. Particularly in a timeframe, just as you can analogize in the early days of high frequency trading, before the liquidity providers developed the technology to be able to respond and manage their quotes better.

They had no quote management capabilities in that time of SOES. So, there was enormous frustration about that activity, which was reflected in a variety of ways and how they responded when they received orders in another system called SelectNet. But also, I think also contributed to because of the exposure they felt in a world where they couldn't manage their quotes, another incentive to not be terribly aggressive in quote competition.

Rich: So, SOES was the Small Order Execution System, and in theory it was an execution system where a small order could be sent into a Nasdaq market maker. At that time Nasdaq market makers had to quote 10,000 shares, was it, or 5,000? It was either 5,000 or 10,000 shares, as a minimum. But you could send in an order smaller than that that would essentially get executed automatically. Except it turned out that it didn't.

If you were a customer of the market maker, then they would execute your order. If you were coming from someplace else, as somebody they deemed wasn't their customer, then they would try not to execute your order. Those people became characterized as SOES bandits. Most of you are too young to remember that term. But SOES bandits later transformed themselves into high frequency trading firms.

So, using the same type of strategy of very fast trading activity to try to capture mispricing or aberrant pricing in the marketplace. All of that set the stage for the actions the Commission took. And I wanted to go back, before I forget, to one thing that Annette had mentioned, that this idea

of controlling order flow and prices wasn't new. If you think all the way back to the Buttonwood Agreement, in the Buttonwood Agreement, they agreed that they were going to preferentially trade with each other and not share those prices with anybody outside the agreement.

The idea is that if you can control that information, you can generally make more money. In early days of the New York Stock Exchange they painted the windows black. They prohibited phones. They didn't allow telegraphs on the floor of the exchange. Everything to try to keep the information private, because with private information you can trade and make more money.

So, I think that sets the stage. The Commission brought the 21(a) enforcement action against Nasdaq. The Justice Department brought their enforcement action against Nasdaq market makers. And then the task that was assigned to me to make sure that it could never happen again.

The way that we went about doing that was what's known as the order handling rules. In the order handling rules, basically what we did was to say that quotes, firm quotes, quotes that could be executed against, things that could immediately be executable, had to be displayed in the marketplace.

A few little wrinkles, they had to be less than 10,000 shares, etc. An institution could choose to do something different. But the idea was that you wanted all quotes reflected in the marketplace. And we had this entity, Instinet, that existed that for all intents and purposes was an exchange, and was being used to trade actively, but not in a manner that was revealed to the public.

So, as part of the order handling rules, we created something that was called an ECN, an Electronic Communications Network. And that was meant to capture something like Instinet and around that time Island, to make sure that their quotes were incorporated into the National Market Quote System, so that they could at least be seen, if not necessarily accessed, by somebody who didn't belong to either one of those entities. The creation of the term Electronic Communications Network was because we knew we didn't want to force Instinet to become an exchange. Instinet had been operating since 1968 under a no action letter from the SEC and we didn't want to force them to register as an exchange, and take on all of the burdens that an exchange had, but we wanted to give them the opportunity to continue to operate as a broker-dealer and to run their marketplace as long as the quotes were included in the market.

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Ken: Let me just--I think Rick you might have brushed over earlier, but that Instinet action letter, I think you had some involvement with that. Can you tell us a little bit about the significance there?

Rick: Yeah who would sign something that lawless? Sure. I mean there were a variety of interpretations the Commission took during that time. Most of with respect to systems that are best left nameless and forgotten. Instinet being the most significant one because over a period of time, Instinet, through a guy named Bill Lupien, evolved from being a strictly institutional system to recognize that the order driven systems only work when you have liquidity. And

liquidity tends to come on a continuous basis only if you find ways to include the sell side, or the dealers in one way or another.

And Instinet, as Rich said, for all the reasons in the inefficiencies, particularly in the Nasdaq market to a lesser extent in the exchange market, had a tremendous opportunity. A series of institutions began to very actively use Instinet to feed their order flow and became quite outspoken about the results from a statistical standpoint. And the results were very powerful. So, that led lots of folks not to be super fans of Instinet. Even as they started to evolve. And as Rich said, this was a difficult issue because Instinet as a consolidated limit order book essentially maintained much of the appearances of an exchange, albeit not all of it.

And I think the only way to describe those interpretations was a pretty conscious effort, albeit I wouldn't say we would take credit for saying we thought Instinet was going to become something huge, but conscious effort of recognizing that the ability to deliver competition across exchanges was challenging, and the ability to make it simpler for electronic systems to be built and to compete for order flow outside of the exchange environment was desirable. And I think that... it was a time where there was very little exemptive authority in the 34 Act, and I think it was a conscious effort to at least stretch, or be very flexible, and have a very narrow interpretation of what an exchange is. Not something regulators usually choose to do. But in this case, I think it was critical to encourage competition.

Ken: So, some of the same questions must have come up after the order handling rules. And you've got these ECNs emerging, and there's the question of whether they're an exchange or not an exchange and all of that. And is this what leads us to Reg ATS?

Rich: Well there were a couple of things that led to Reg ATS. So, at the same time, once we allowed the existence of something, at least a regulatory existence of something like the ECNs, there was the beginning of a proliferation of ECNs. You also have to remember that was before these things existed. We had little Motorola flip phones from the Commission at the time.

But the fact that you could do so much with technology at the time, more and more things came. Bill Lupien came back with another idea, Optimark, something that never succeeded. There was the Arizona Stock Exchange, there was a whole slew of new ideas and new ways that people were trying to do things. And our view was that really what you wanted was you wanted competition in the marketplace. And that competition really regulated markets much better than the SEC could. We didn't view it as our job to design the market, we viewed it as our job to try to allow more competition to exist.

Now sometimes to make competition, to let competition exist, you actually have to remove the barriers to competition that exist, because many of the laws and regulations really reinforce the incumbents in the marketplace. The fact that the New York Stock Exchange had about a 90 percent market share is indicative of those barriers. Today I think their market share is hovering around 30 percent. And that's really the result of competition, not the result of the SEC saying, send your order someplace else.

So, it's really trying to provide competition and to let more flowers blossom. What happened with Reg ATS, was that after the order handling rules were done and we had created ECNs, it dawned on me that there was a loophole. And that loophole was any company, and at the time I thought of Microsoft, could essentially set up an exchange to trade its own shares without any registration, without any control over the trading of those shares, without any transparency, without any access, they could just set up a market themselves and trade.

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I thought was probably a real possibility at the time. So, part of what ATS was, was to make sure that we closed that loophole. That we made sure that if somebody wanted to do that, if a company wanted set up an exchange for its own stock, that would be fine, but they would at least operate under a light regulatory system.

There were another couple of things that were embedded in Reg ATS. Part of the purpose of Reg ATS was to define what an exchange is. Because that had never really been defined in the law. As an economist and as somebody who did market microstructure, the design of security markets, I knew what I viewed as an exchange. I had a pretty good idea of that. But I set a group of lawyers to work on defining what an exchange was.

She's not here, but Belinda Blaine chaired that group. And I remember they went and worked for about a month or so and when they came back and sat down across from me, she had two very thick binders, which she pushed across the table and said, this is everything that's ever been written about what an exchange is. I said great, and I pushed the binders back and said, now tell me what an exchange is. So, they went away again.

I think in Reg ATS it probably described fairly closely at that time what we think constitutes an exchange. And what the oversight of an exchange needs to be. Now what we wanted to do was not force everybody to walk down the exchange registration path, with all of the weight that's associated with that regulatory burden. But we wanted to say, okay you can be a broker-dealer, you have to provide certain things. Fairness, access, transparency, were essentially the criteria that we wanted to apply. Much the same criteria of course from the 75 Act Amendments.

So, the idea was to make sure that if people wanted to build new trading systems and try new things they could. We also did a couple of other things with Reg ATS. We allowed exchanges to also build ATS's and to be able to innovate and try new exchange constructions or techniques. And at the same time, what Reg ATS did was it allowed exchanges to privatize. That was one of the objectives.

Arthur had--Arthur Levitt was chairman at the time, and Arthur had been the chairman of an exchange. And his view was that exchanges were bound by their floor, that they couldn't do the right thing often because of the floors and the fact that the floor-controlled things. So, the idea was to try to at least provide a pathway for exchanges to privatize if they wanted to. So, that was embedded in ATS also.

Ken: Let's cast our minds back a little bit and talk about some of the other things going on in that period. We've got decimalization. What are some of the other contextual things that we should think about as we talk about the transition from ATS and moving onward?

Annette: Well I would certainly say, I mean ATS and I think Rich did a fabulous summary, really did transform the markets, but it very much transformed what was the Nasdaq market essentially. And what we had, and what sort of led up to Reg NMS was that there were still a lot of impediments to innovation in the listed market, and, in particular, we had a lot of legacy rules that really were written at a time when we had floor-based exchanges, and very similar models. And markets that were not anywhere near as electronic as what we were now seeing in the Nasdaq market. And so, I have to credit the Commission with realizing that this had to be addressed, because you could not have these rules stay in place and thwart innovation. And much of what we've heard today were attempts by the Commission to encourage innovation in the markets and encourage competition among markets. But at the same time, keeping in mind the other National Market System mandates, including encouraging order interaction.

So, what happened after Reg ATS was, and I do credit Arthur for being one of the people who really focused on this, was that Rule 390 had--the New York Stock Exchange Rule 390 had prohibited their members and their affiliates from affecting transactions in New York Stock Exchange securities off a National Securities Exchange. And of course, as Rich said, if the New York Stock Exchange had 90 percent of that market, pretty much meant you can't affect transactions in New York Exchange Securities anywhere, but on the New York Stock Exchange.

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That was a little bit of an impediment for people like Instinet trying to get into that market and for over-the-counter traders to get into that market. And so, we recognized that, although there had been lots of focus, I think even in Rick's time, to Rule 390 and coming up with some exceptions, the bottom line was it was still a major competitive impediment.

And so, we wanted to focus on what would happen if we essentially forced the New York Stock Exchange to repeal that rule. They did repeal it, but I wouldn't say they were happy about it. But we wanted, basically, folks to comment on it and understand through the concept release that we did that we understood that there was something that came from a rule like that. And that was that you had much greater interaction of orders, competition among orders, in a single location. And that what that does is it furthers order interaction, and therefore more competitive pricing.

Now that again is in competition with another one of the 11(a) desires, which is to encourage competition among markets. They're really competing goals. So, what we asked in the concept release was, is it possible to have a system where we both encourage competing markets and do away essentially with Rule 390, but also keep in mind that this ability to, or this desire to, have order interaction. And that's where we talked about a number of different ways one could do that, from... with the obviously the most... the way to really bring order together and the most dreaded one which we would never have done would be the central limit order book. But what we ended up with was something that ultimately required greater linkage.

Ken: Was this the fragmentation release?

Annette: This was the fragmentation release. The fragmentation release was the release that talked about Rule 390. And discussed the fact that you know another... basically another term for competition is fragmentation in the market. The more market competition you have the more you've split orders among different venues and therefore you have fragmented markets. Is there a possibility that you can have greater competition but also encourage greater order interaction through other means?

Rick: I'd just add one point to this. Annette summarized that beautifully and sort of sets up for where the world goes. But one interesting event that comes out of Reg ATS and the environment and to some degree the Order Display Rule and the environment that encouraged the flourishing of ATS or ECN systems was the innovation that Archipelago, which for the sort of resulted in their becoming the third major ATS during the time, of order by order routing. And the first time a system, albeit in a limited way, took advantage of some of the changes of ATS, etc., that at least... we'll talk about access fees later, but at least limited access fees. And made access and some of the anticompetitive things that had been done in access less viable before.

And Arca for the first time demonstrated with that the popularity and the effectiveness of providing a single place that would route orders to the best price no matter where it was. And that I think is interesting as much as anything else, because it's one more precursor to Reg NMS that we'll talk about later.

Rich: Another interesting thing is that Rule 390 that was mentioned by Annette, it was probably more of the impetus for how we got to decimalization. You know, Rule 390 basically said, if you were a New York Stock Exchange member you cannot trade a certain list of securities, securities before a certain year. Any place other than on the New York Stock Exchange.

So, that provided an opportunity for what were called third market makers. They would take New York Stock Exchange stock and they would cross them or trade them and provide liquidity other than the New York Stock Exchange. The New York Stock Exchange of course didn't like that as more and more of these third market makers started doing business. And they also paid for order flow and they did a whole bunch of other things that appeared in the press in various versions during that time.

But there was one particular, very large third market maker who was calling and complaining about the fact that the New York Stock Exchange, which at that time also had regulatory--it had a regulatory arm that was before it had been merged with NasdR. And complained that Grasso was using that regulatory power to try to force people to stop sending order flow to them. And wanted to basically complain about that.

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He said to me if Grasso doesn't stop I'm going to break the eighth. And the Commission of course would appreciate the eighth being broken at that point in time. And I said well that would be a great thing to tell Dick, why don't you call him up and do that. So, he did, and a few weeks

later this person called me back and said, you know Dick still hasn't stopped, they're still doing it, I'm going to break the eighth tomorrow. And I said, go ahead. Well that person was Bernie Madoff. Yes, the same Bernie Madoff.

Rick: I was wondering if we were going to get to the name at some point.

Rich: I thought you probably knew the name so... The same Bernie Madoff that later conducted a huge Ponzi scheme. But nonetheless he broke the eighth, went to sixteenths, or teenies as they were called. And the markets went wild, all the exchanges went crazy because they couldn't... they said well we have to do this. Of course, within a week they were all trading in sixteenths, and you know that of course led to the eventual adoption of decimals.

I remember being on the floor of the Boston Stock Exchange talking to the chairman of Boston, where he was saying, well they can never do decimals, decimals is too complicated. And we're standing next to a specialist post. And he had sixteenths, eighths, etc., etc. and then the conversion to decimals because that's how he could think about them, rather than keep track of how many sixteenths were in something. And decimals started down its long tortuous path. That, I think ended up happening under Annette.

Annette: And was legislated, where we had a lot of pressure from Congress to implement decimals. And after all the complaining I think it actually went quite smoothly. I don't think that was any--it was clearly again a situation where I think it brought a lot of fear into the hearts of market professionals because it was clear that spreads would narrow if you moved to pennies from eighths or even sixteenths. But nevertheless, I think it worked quite well.

Then, as you know, under Reg NMS then the issue was what about sub pennies. And even with pennies it did change some behaviors. Rich mentioned Dick Grasso who was the head of the New York Stock Exchange. He always said, you know, that if we go to pennies, and mark my words, it's going to work out better for the market makers and the specialists because they'll be able to step ahead for a penny and they'd better the price.

There was some concern about that, but it was a much bigger concern that you could step ahead for a sub penny. And so, one of the issues, and also just the complexity in the markets to moving to sub pennies. So, one of the things that Reg NMS addressed was that trading would be in pennies but not sub pennies, for that reason.

I mean the other... again we had, as we mentioned before with the New York Stock Exchange, well in the exchange space, this notion of best price or best execution, they had a linkage. The Intermarket Trading System, which was a very, very clunky system, where if you were on one exchange and then New York let's say was posting a better price, you had to go and try to attempt to get that price or match it. And if you sent the order in New York, you sent it through this very clunky system, and it was a single, sort of a single point of failure, a single pipe so to speak.

And if you gave the New York a very nice period of time that eventually it was... they got it all the way down to something like 30 seconds. But you can imagine today telling someone to wait

30 seconds to give another market the ability to tell you whether or not they were going to trade with you at that price.

And so that obviously had to go in this new very highly electronic environment. So, one of the things we did in the access rule portion of Reg NMS was to say that you no longer are going to use this ITS system, but that we authorize linkages, because obviously technology at that point would permit that.

We also limited access fees. Of course, that's still an issue that Hester and others will continue to have to address because it continues to be a challenge, but we limited access fees to three tenths of a cent per share which really was sort of punting, because that just happened to be what the market was bearing at the time, and was basically adopted and retained in order to protect the ECNs who at that time were making their money off these access fees. Ironically today it's the exchanges who charge the excess fees and not the other market participants. And then we said that the SROs had to have policies and procedures to prohibit locked and crossed markets.

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As I mentioned, we had the sub penny rule that was a second element of Reg NMS. The other was the market data rules. Again, another area that never goes away. I think one of the themes of this panel will be that many of the issues somehow are always with us. Market data was just as controversial then as now. One of the problems that the Commission saw was that there were distortions in how the market data was allocated among markets, because it was allocated by the number of trades as opposed to the number of shares. And so, it was encouraging bad activity like wash sales in order to create trades so that markets could get higher market data fees.

But you may recall that during this period the SEC also had an advisory committee on market data. As today there were debates over whether it paid to have a single consolidator system or whether there would be multiple competing consolidators with ultimately, I think the Commission deciding that it is somewhat of a utility function and very important, that market data was so key to trading that we wanted to make sure that there was a lot of integrity and uniformity in trade reporting and the information that was distributed. That said, you know as I said, it remains an issue that we're still dealing with.

And then of course the big issue and the one that got everybody's attention was what was called the order protection rule which people always reverted back to calling the trade through rule. And the sense there, and it was interesting, Rick talked about Archipelago, I mean the sense was we now had the ability through technology to go on an order by order basis and to get the best price. But not under a system like the New York Stock Exchange had with a floor system. So, we had this notion of protected quotes. If your quote, your best price in the marketplace would be protected, and if orders came in through another market they had to match that price or go to try to seek that protected quote. But the quote was only protected if it could be accessed within one second, or less.

So, the notion was that we again wanted to encourage very efficient price formation. We had lots of markets at this point. We wanted to encourage greater order interaction. And the notion was that you'd have greater order interaction if you would encourage the placement of limit orders, and more efficient pricing if you encouraged the placement of limit orders, and those limit orders had a better chance of execution and that they couldn't be traded through.

There was also a concern, and I know this continues to come up, even in the EMSAC, the more recent equity market structure advisory committee when people talk about this. Who did the... who does it really protect. And I think the notion was certainly that the trade through rule, for the most part, certainly protected retail customers. And we wanted retail customers to be protected.

If you look, I mean even today, I suspect if that the people who get traded through might be... probably wouldn't be the institutions. So, the notion was to provide that protection by ensuring that they got the best price wherever they happened to enter the National Market System. They would get the best price either through accessing that best price quote or by having it matched.

Ken: I'm interested in how you and Market Reg were thinking about... you've described the four problems, and the four solutions. And I've heard Reg NMS described that way too. It's just basically this grab bag. Was there a point at which you were thinking that you wanted to put these things together and you wanted to make a rule that was somehow coherent? Or was it really just sort of this opportunistic thing?

Annette: Well certainly the central theme is to improve the markets. But I think they were... you know we had a great many... we had public meetings we had all sorts of private meetings. We sort of gathered information on what we thought were the issues that were most pressing, and I would say used it as the opportunity to address those issues in one rulemaking. There's not necessarily a common theme to all of them.

And I don't think there's any question that the part that got the most attention was certainly the trade through rule. I think a lot of people sort of forget some of the other elements of Reg NMS. But I would say that even during the various meetings and outreach that we had with the industry, the most attention was on the trade through rule. But, again, a lot of it was I'd say trade through rule, it was on access to markets. It was on linkages. I mean it was how do we access... what should be a protected quote. That kind of thing, because again wanted to really further innovation in the marketplace, make sure that the most innovative players and the technology wasn't being thwarted by the SEC's rules.

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Ken: Rick you had been looking on at this as an industry regulator, right?

Rick: Yes. You know some of us have sort of jumped back and forth between government and various industry regulators. But yes. First, since this is the historical society, it's probably good to step back for a second and realize just how profound the changes that came out of the Order Display Rule Decimalization and Reg NMS really were.

That essentially you move from an environment where spreads are artificially wide to an environment that allowed competition across a wide range of electronic competitors if you will, high frequency trading. And that you moved into an environment with decimalization where rather than simply engage in momentum trading as the market moved. You get more sophisticated to do a combination of that in market making because the ability to identify momentum moves and to step... some would step in front, some would say provide a better price, continually allowed for the ability for an interaction and suddenly instead of having one market maker specialist, a few market makers in a variety of different ways. You had the ability for people to compete, again for better or worse, no matter what your access point was and no matter what your capital was and in large part, as long as you could get somebody to sponsor you.

So, were all the steps absolutely critical to doing that? Not necessarily. Obviously, Europe evolved in a slightly different way and got to a similar spot. But it did... it sometimes it's important to step back and realize just how dramatically it changed the world, and how it created an environment where a competition, where you were operating with dramatically lower effective spreads but perhaps more challenge competition from, or activity from, the standpoint of institutional investors.

So these were not small things, they really did transform the market. Albeit doing it in the way that Rich indicated in attempting to step away from competitive barriers and allow competition to take the market where it wanted to go.

Rich: It's probably also important to remember that there is an underlying change in the demographics of the market over all this time too. If you go back to the prewar period--that's much further back than we have been talking--equities were owned mostly by individuals. And it was subsequent to the war, World War II, that equities started to be acquired much more by pension plans and retirement plans and going into institutional funds. The growth of the mutual fund industry, and those types of things.

Today if we set aside high frequency trading, which may be noise in some ways, in terms of the trading activity in the market, most of the trading volume is done by institutions. And during this time period that we're talking about, institutions actually had started to pay attention to what the market structure was, and how their orders were handled.

Academics had been writing about price impact, and slippage, and implementation short fall and those types of things. And, all of a sudden, the institutions started to say, oh wait, it matters that when I trade, how big the spread is, and where I get liquidity and how I get liquidity and whether or not I move price, or whether or not somebody's front running me. And all of that helped to motivate what we have been talking about today, because we had a lot of institutional backing. There were a lot of institutions out there saying this needs to change. This is disadvantaging us. This is disadvantaging their shareholders in the mutual fund space.

So, that's an important consideration. And while we're often reminded that the SEC's mandate is to protect the individual investor, that individual investor is a smaller share of the market, we

have to protect that individual investor in a somewhat different way I think than maybe 50 years ago.

Annette: I think that's a really great point. I totally agree. I think that the institutional investors were very vocal during this process, and actually were quite supportive of a number of the changes and were very instrumental in sort of getting this through in a way through their very positive comment letters.

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And the other thing is, we talk about protecting individual investors which obviously is something the Commission cares about. But so much of individual investment today is through collective investment vehicles, mutual funds and the like which we consider institutional, that there's a real blurring there. So, the fact that the mutual funds and the other institutions were very supportive of these changes, and ultimately saw the ability to have more competitive markets and as Rick said, much narrower spreads. I mean the market... if you really look at what happened in terms of trading after these changes, I mean certainly there's a lot of unfinished business. But the spreads narrow very substantially the markets are much more competitive than they were.

Ken: I know you talked about institutional investors help in getting this through. And getting Commission approval of NMS--that process is kind of legendary. What about the challenges of implementation? Were there any wrinkles in that that needed to be ironed out?

Annette: Well any change that large would certainly take quite a bit of effort and so I think there was... it's interesting. In retrospect I've heard several market participants say that in a way, in retrospect, they're glad that the Commission made these changes because they got a lot of money for changes to their technology that they might otherwise have taken their time investing in. And that that actually had a very positive impact on the market. That wasn't our direct intent. But that certainly happened.

It certainly took time. It took a good deal of time as did decimals and a lot of these things. But I think what the Commission did that was very sensible was to give people more time, and they sort of understood that this was a sea change and that it was going to take a lot of coding and other changes. And I think they were good about forbearing. They didn't bring enforcement cases but rather gave additional time for implementation.

Ken: So, I think we're getting to the point where we can start to hit some of the big questions here. And these can go to the whole panel. We've been ranging between this late 1990's early 2000's period and talking about the fundamental changes that were happening. Maybe the first big question is, why then? What was going on within the Commission? What was going on outside the Commission that made this happen at this point in time?

Rich: Well I think there are a few things that came together. One I've already mentioned -- technology was blossoming at that time. I mean it's hard to think about it today. We're talking 20 years ago roughly. But it's hard to think about how much technology is involved in our lives

today and how little there was then. My daughter says, how did you talk to anybody if you didn't have the internet and text messaging and things like that? She can't imagine that world. But that was starting to blossom at that point in time.

The second thing was it doesn't hurt to have a stumble in the marketplace, which the Nasdaq market did have at that point in time with the collusion. The avoidance of odd eighths. That helped provide some of the impetus. That doesn't mean that it was easy. And it doesn't mean that there weren't a lot of people arguing about it. And I think that goes a little bit to the question you were asking a moment ago to Annette.

But the idea is that you get a lot of noise, a lot of noise comes back with these things. "You've going to destroy the marketplace." "You're ruining the refined and wonderful institutions that we have." And "you're going to increase spreads on all those little stocks because we're cross subsidizing the spreads with the spreads on the large stocks." Well from an economic standpoint that's a really bad outcome to begin with because you're allocating money to those stocks that should be allocated to those stocks because they don't support them.

Or "you're destroying the IPO market." I got a lot of that kind of noise when we did the Order Handling Rules and ATS, etc. Annette caught a lot of that noise too with NMS. The same people making the same arguments now on an entirely different thing, because it sounds good, but you know it's that old adage, you have to follow the money. Almost always that noise was coming from a particular economic standpoint. And people hoping to reverse things that had happened in the marketplace.

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Rick: If you reflect on the number of times in which rule proposals coming out of then Market Regulation, now Trading and Markets, were greeted with the fact that western civilization will end, it would be a fairly long list. But certainly, anything we've talked about today definitely got that reception.

Annette: To refresh my recollection on some of the NMS issues, I went back and read a speech that I'd given. And I made a similar point. I said you know that very often when we make proposals such as this, we'll always get letters that say that "if you do that, grass will grow on Wall Street." And I said, you know we need to sort of update the criticism a little bit. At least now you can say you'll turn this exchange into a Starbucks. But it's basically the same point. I mean to make... it's interesting when you talk about just how much technology impacted all of this. And it was really profound.

I heard recently Drew Faust said, you know at Harvard, said that she's retiring and that she remembered the week that it was announced that she was going to be President of Harvard, which was only 11 years ago was the same week that Steve Jobs announced the iPhone. I can't believe that was only 11 years ago, right. So, it does tell you just how much things have changed, and we just lose track of time, because it all seems so second nature to us now.

You know I would say that the other thing that, certainly with respect to NMS, when I've reflected on how did we get that done, and it took a long time... I mean when you think about the process from basically the year 2000 with the market fragmentation concept release through 2005, it was a very interesting period in a number of ways.

First of all, we had a really, I think, very talented group of people in the Trading and Markets Division. Rich mentioned Belinda Blaine. I mean we had people who really have been following this, Bob Colby, Elizabeth King, you know I could go on, who really had been following these things for a very long time and really understood the issues. And were really technical experts which, we were very fortunate to have people like that in the government.

We also had over that period at least two chairman who had headed exchanges. So, you had Arthur Levitt and then ultimately with Reg NMS coming to completion with Bill Donaldson. And they, I have to say market structure. Rich makes it sound easy. It's very complicated. These guys can take it down to very simple terms.

But it's very complex stuff. And when you get these chairmen who come in as political appointees and they're here for a limited period of time, it's a big lift to address issues like this in the course of their tenure. So, having two people who could actually run markets and who really knew how markets operated, it's not a complete surprise to me that it was during their tenures that some of these innovations were effected.

Rick: I completely agree with that. I guess I'll return to Rich's thing. While Annette and the team at Trading and Markets would have done the right thing no matter what happens, and stuff happens does impact the political reaction, etc., and of course coming before this was the issues at the New York Stock Exchange with respect to specialists trading ahead of orders, that led to a change from Dick Grasso to John Thane first John Reed and then John Thane running the organization. Somebody with a very different tactical and strategic approach with respect to what the exchange would look like in the next 20 years led to the acquisition first of ARCA and then Euronext.

And it clearly changed the environment when Reg NMS was proposed that the New York Stock Exchange, while still deeply concerned about it wasn't flat out and aggressively opposing it. And that politically from the ability of making it happen made it at least easier. As I say, the decisions of the Commission undoubtedly would be done for principled reasons and not based on opposition. But it's always a little simpler. And the changes in the John Thane New York Stock Exchange as well as the exchange's own self-interest because of its ownership of ARCA etc., was also meaningfully changing the dialogue.

Ken: Well the Post-NMS market has made for a lucrative press but not necessarily good press for the Commission. We've got flash trading, dark pools, co-location, going round and round and round. Books like *Flashboys*. And most of this sort of standard narrative hinges on the unintended consequences of regulation, and the unintended consequences of the SEC's actions. Can we add some nuance to that characterization?

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Rick: The Commission always has to take a look at how markets have evolved and look at whether there are unintended consequences. And I don't know any regulatory actions that don't have some. They also should look at the huge benefits from the standpoint of the quality of executions for retail investors and institutional investors when they make that decision.

But the strength of the Commission over time is its ability to continue to freshly look at issues and markets as they evolve, and to deliver the expertise that's necessary to do that. And I'm confident that this Commission, just as commissions in the past, will do that and respond.

Are there issues to look at? Sure. When order routing decisions are made from the standpoint of access fees, more than anything else, a large part of the time, that's worth, as the EMSAC suggested, taking a look at. When all retail order flow essentially in the United States is handled away from exchange markets by a series of large dealer trading firms, that has provided a number of benefits to investors, but it's perfectly reasonable for the Commission to look at.

I don't think any of us should say that regulation should never be immutable, and it deserves to be looked at. But it also should receive the respect of how it's profoundly changed markets in ways that have resulted in effective spreads that are simply not seen anywhere else in the world.

Annette: I would say, I mean certainly I think the term NMS is sometimes used as what the current markets are as opposed to causality. And so, when you look at things like you referred to *Flashboys* book and co-location issues. Again, that's not something that the Commission was unaware of. The book made it seem like this was a new discovery where you look in 2010 the Commission issued a concept release that talked about issues like co-location and recognized that it was something that was occurring, and said is this a problem? Is this something that needs to be addressed?

So, again, I think that when you don't really understand what's going on it's easy to just sort of paint a broad brush. I think sometimes people think that HFT, maybe that's an outgrowth of NMS. I sometimes say to people, well, doesn't that occur in Europe a lot as well? And if that's the case well I don't think they have Reg NMS.

So, obviously there's more going on here. So, but having said that I do think that one of the issues that we have now is it's been quite a bit of time since Reg NMS was implemented and you know the market's changed so much particularly because of things like the fact that they are very innovative market participants and the power of technology and the like. It's incumbent upon the regulators to look at these things and to update and refine. And that's really what it all takes. Just refinements I think. Being consistent with the underlying principles. So, I do think it's time and there are, I'm sure, a number of things that we'd all have on our wish list that could be done to update Reg NMS.

Rich: I would agree with both Rick and Annette in terms of what they said. And I don't know that I can expound or expand on it very much. Something like *Flashboys* from my perspective, the formula for writing a book is that you find somebody to make a hero and you make everybody else the bad guy and you write a book that has some truth in it but is mostly fiction, in

my opinion. So, that doesn't do anything. But most of the things that people complain about in markets, you know, co-location, we had co-location for 200 years on the New York Stock Exchange. We had these guys standing there who could trade before the public. They were co-located. It wasn't done electronically, and it wasn't done as tirelessly as computers can operate.

But it was very much the same type of thing. That was also very close to high frequency trading. We had the SOES bandits, that evolved into high frequency--even the high frequency trading, people now are essentially butting heads. They are so fast with the co-located boxes that they actually don't have any priority anymore in their order flow. They're very fast, but when you get to the nanosecond the orders actually end up randomized before they hit the exchange. So, they're just randomly in there.

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So, what's the way to try to fix that? Is you submit a lot of orders at close. You know which is what we're starting to see in the marketplace is that's the way to try to get around that. And maybe you're getting the closing price. Personally, I've always been suspect of closing prices because closing prices might represent 100 shares. They do not necessarily represent what the true price of something is. But of course, we price everything is based on that.

But you know, these problems or these issues and the way you look at things exist all through time, and all through markets. The arguments are almost the same. The people making the arguments are almost the same. It's just cast in a slightly different way because of technology changes, because of structure changes, etc.

But I agree, the job of trading and markets is to continually evolve with markets. Not to shape, not to make the decision as to there should be a CLOB or there should be something else. This is my view. But to make sure that the markets are kind of fair and competitive and that they evolve on their own. That I think is still the best way you regulate markets.

Annette: And I guess I'd like to add, and I totally agree with that. And I'd like to add that I often like to say the reason we need that, I mean why do we need any help at all? I mean why is the invisible hand not good enough, right? Why do we need any regulation?

Rich: Because the invisible hand is really greedy.

Annette: That's right because the invisible hand is greedy. There are a number of externalities, just as we started at the beginning and talked about how market participants left on their own will keep all the price information and the markets will keep all the price information to themselves. It is in their interest to act in their interest. And so to have a really vibrant capital market where you have investors who have confidence that they're getting a fair shake that you have fair and orderly markets, you have best execution, you have efficient pricing, is by having regulation. Not heavy-handed regulation, not regulation that chooses winners and losers but regulation that lets everyone operate fairly in an environment where ultimately the pricing is efficient and where you have investors in your capital markets who want to be a part of it.

Rich: I won't say I agree with everything, because it certainly is true. But in the end, if the Commission continues to err on the side of looking closely, understanding markets and looking at where there are barriers that reduce competition and where there are barriers that reduce order competition, and evaluate from that standpoint in a way of looking to eliminate barriers and then get out of the way, I think that has been the success of this program over a long time, and will continue to be.

Ken: Let's talk a little bit about some of the specifics. We went through a significant change with ATS and NMS. Annette you talked about refining the rules as we move on. Markets evolve, market participants are extremely creative. What do the three of you see as some of the things that are coming across the horizon now that will need to be dealt with in the next few years or decades because of where we are?

Annette: You know one thing that Rich talked about that I don't think we gave much attention to here was the privatization of the exchanges, and the fact that they serve this SRO function and they get market data fees and they're regulators, and you know, there were other parts of that analysis that we understood at the time and actually teed up that were never, we never returned to address. And one of them was SRO transparency. And I think a lot of the issues we have today about market data fees and how much we always said that market data fees go to, among other things, to pay for the regulation of the markets, and as you know the markets are now regulated a little differently than they were when they were not-for-profit public enterprises.

So, I think some of that would be opportune to go back and review. And I know that in the last several years there's been talk of that. I remember Commissioner Gallagher had talked about that quite a bit. And again, without being, without saying what the results would be, I just think it would be very helpful to have a better... you can't really, I don't think have a meaningful debate on some of the issues that are facing the Commission unless you have the data to analyze it. And I don't think that that's all necessarily available at this point.

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Rick: I mentioned access fees before, which I think is great that the Commission's relooking at. But if you want throwing something out of left field, I think it's great the Commission's now focused on fixed income. The improvements in equities are in the nanoseconds and hundredths of a penny type issues, fixed income is still about nickels, dimes and quarters. And there are real issues both from the standpoint of treatment of retail investors versus institutional investors. And generally, how the market operates, although with the Commission's help I think dramatic steps have been made that have made that market far better. But I think if the next five years would do more attention to fixed income even if at the cost of some inequities would be kind of okay with me.

Rich: I agree with both those points. I think that to go to access fees, access fees of course partly came about in the Order Handling Rules. And frankly it was not something that we wanted. We would have much preferred to just say everybody can have access to the orders. But of course, there were business interests where somebody said well everybody has to pay to belong to our club. It's not fair. And recognizing that it probably wasn't fair to take away their revenue at the

time, was how we got to the access fees. The fact that exchanges are charging access fees probably is the wrong place. And maybe that needs to be revisited and in terms of how that works.

The same type of thing... so I'm thinking of things that we started, but that I expected to kind of continue to roll along. What the threshold was for when you had to start acting more like an exchange and had to do reporting etc. We started with a relatively high threshold, but the idea was that that was supposed to get lowered over time. Those are things that I think the Commission should do because it will incorporate those markets into the entire marketplace more effectively.

So, it's all a process. I would not say that we need to stop where we are today. But we need to just keep evolving and keep seeing where the pressures are and where the changes need to be made.

Ken: From a historical perspective, in the 75 Act Amendments, it was Congress who told the SEC, gave the SEC the task of sort of guiding the creation of this National Market System or fostering a National Market System. And as we spoke about at the beginning it took some time for the SEC to kind of step up or decide to become more active there. Do you think the SEC has gotten as close at this point as it ever has to realizing that mandate of Congress clear back in 1975?

Rick: Who knows what they were thinking about in 1975. And it's probably better not to reflect on it. But I think what this story basically is that the SEC is willing to not make perfection be the enemy of the good. And I think on the whole that's been to the benefit of investors.

Ken: Great. Well we've come to the end of our time. I'd like to thank Rick, Rich, and Annette very much for participating. This has been a great conversation. And it's my pleasure to remind everyone that there's a second part to today's program. So, at this point everyone is invited to head out into the lobby for ice cream social to celebrate the Commission's 84th birthday. Thanks again everyone.