

Energy Insider Interview Series

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1. A few years ago, you wrote *The American Shales*, which is a history of the American shale plays. What was your motivation for writing the book?

Thanks for asking about that. In particular, with *Oil and Gas Investor* magazine, I started with the magazine in 1998 and pretty much followed the shales all along. But in early 2013, there were several events right around the same time that got me interested. I was surprised in January of 2013 that there was something I'd just learned about the Eagle Ford play that I didn't know before. And I had to wonder—what else did I not know? And what else did anyone or everyone not know? Shortly after, I was at a conference where the CEO of a large E&P company involved in virtually every one of the shale plays had remarked about how his company had founded this and founded that, and I'm thinking, "No, you did not." But untruths, over time, tend to become fact. What facts were we eventually going to lose access to over the course of time? I thought that, while people who knew how things went down were available to talk to, it was a good time to document this. I didn't want the history of the shale plays to become something that someone, eventually, was forced to try to piece together from public record alone.

2. It seems like you had a lot of access to different companies, different individuals, really almost everyone. Was it hard tracking all those people down, and what was the most interesting thing you uncovered while working on the book?

It wasn't difficult to track folks down. Fortunately, being involved with the magazine meant I still kept in touch with many of these folks, even though some had retired. Plus, there were a few instances where, in talking to them, I learned about other folks I should talk to as well.

There was and continues to be so much that is interesting about these shale plays. Most interesting, and of course we all recognize it, is that we can never underestimate the importance of competition in free markets—the competition in gaining land, the competition for capital, the competition for the lowest well costs. And there is fundamental difference in business plan in working with conventional versus unconventional rock. For conventional, the greatest challenge is essentially finding the resource and possibly overcoming some service issues. With unconventional resources, their location is well known by logs and samples from old vertical wells. How to economically develop them is the challenge. It's more of a manufacturing business model. If you're looking at drilling 10,000 wells, every dollar matters. And what is the best well design? Land in the uppermost portion of formation? The middle? The bottom? Range Resources's early breakthrough in the Marcellus, among many, was that landing in the uppermost portion is where they get the greatest economic impact. So how to develop unconventional resources—capture the most oil or gas for the least spend—is the greatest challenge and continues to be.

3. Are there any other lessons in writing this book that you can carry over? Or are there things that you think were lost in time that you felt were being repeated, or are once again relevant now a couple decades later?

Whenever I set out to document how the shale plays came to be, I didn't realize that in doing that—and not to push my book here—it would turn out to be a guide book on how to do this any place else. For example, in the early days of the Barnett, with horizontal fracking you could make 2 Bcf or 3 Bcf a well, and, well, that's remarkable. But if you can't get your well costs down, or if you spent too much on the early

science of it, then you're not going to do well. And by then, possibly, the shale play itself may have gotten a bad name. And that inhibits access to further funding.

I'm looking right now at where there are tight sands in the Powder River Basin, but the early emphasis on fracked horizontals is in the shale member of the basin. In this play, there's been a turnaround to "Well, why don't we put these fracked horizontals in the sandstones?" And they are seeing great success there. And that is the nature of anything. Industry does eventually find a way, through free markets and competition, to make their assets profitable.

4. **That actually leads very nicely into the next question. Let's talk a bit more about the current state of the industry. Shale producers have bounced back pretty well after the downturn, but there are a lot of questions about where the industry goes from here. Deal flow picked up in 2016, but it's slowed down since the first quarter of this year. Do you think the industry is headed toward more consolidation in the next couple of years? Are particular basins poised for more consolidation than others?**

Yeah, I certainly do expect consolidation. The Bakken, for example, is in consolidation. Actually, those properties are increasingly being viewed as very suitable to—I don't want to necessarily say MLP-type structures—but to a mature-asset-type structure versus an exploratory/appraisal/development-type structure. There are still tremendous resources in the Bakken. By no means is the basin finished. But with \$50 oil, there's a lot of potential in the fringe that has kind of been pushed aside by focusing on the core because of the economics of \$50 oil. The fringe could use some investment attention and that may one day be capitalized by dollars from divestment in the core.

The Eagle Ford is certainly primed for consolidation in terms of how much acreage there is to be developed—and the natural gas window of the Eagle Ford hasn't really been tapped. And then in terms of deal flow in general, we've seen in the past three years now some more creative structures, including joint ventures with a financial partner rather than the traditional E&P partner. Also, structures in the Permian where the seller retains upside via equity. And SPAC (Special Purpose Acquisition Company) money is coming in. Jim Hackett, former chairman of Anadarko Petroleum, is buying in the STACK play in Oklahoma. Stephen Chazen, former president and CEO of Occidental Petroleum, and other SPAC—they have money to deploy. That's not what one would typically consider consolidation, but it does represent deal flow. And, yes, there will be consolidation moving forward.

5. **The shale plays like other oil and gas exploration in the U.S. have been characterized by a lot of entrepreneurial activity throughout their history—the "wildcatter"**

mentality, if you will. That's still true right now. If you combine the three largest natural gas producers together, they still only make up about 10 percent of U.S. output. Even if there is some more consolidation in the years to come, how important is the role for independent producers in the marketplace, and how do you think they will impact it?

There are still "wildcatters" at work in basins across the U.S. Like the Bakken, there's still tremendous resource to be classified into [Proved Developing Producing] there. So, some of the opportunities for independents may be because of another operator's need to monetize one asset to spend on appraisal and delineation of another. We've seen asset sales by operators to support their spend in the Permian, for example. And that creates opportunities for others. For example, there's a very small E&P startup in Lavaca County, Texas—I think it would be fair to call them "wildcatters"—where this acreage just wasn't getting a great deal of attention because the money was moving to the Permian. They were able to put something together. It's not a 10-county play; it's not discovering the Eagle Ford itself. But it is putting together a nice piece of potential for themselves and derisking a portion of the Eagle Ford that has not yet been derisked.

6. **Looking even more broadly, we've heard for decades now that energy dominance is right around the corner thanks to the shale revolution. What's your perspective? Is it realistic to think that energy independence is more within reach now?**

Oh yeah, absolutely. In terms of energy independence, I think there are two different definitions of that. One is energy independence where we self-supply our own demand. Or two, we continue to self-supply our own demand and also supply so much of the world with refined product. Energy independence itself, just in the way people generally speak of it and think of it, which is the former of the two, I absolutely think it's possible.

I think that there's not enough conversation about North American energy independence. This is something I've been thinking about for a few years now, particularly as Mexico has shown interest in changing its hydrocarbon profile from net consumer to net producer or at least even. When you think about the resources in the United States, Canada and Mexico, and that all three are countries respect property rights and are friendly, it's an interesting new perspective. We've got an environment in which people can compete. Mexico's opening up its assets to foreign ownership. When you put the three together that is a more powerful energy powerhouse than OPEC or Russia or any other country in terms of resource, stability and reliability. As you know, OPEC members don't necessarily get along and Russia doesn't

necessarily get along with them. Anything can happen there. But North American energy independence, you could put that together, and I feel like the American energy future is really, really great.

7. Why do you think energy independence hasn't been talked about much? Is there any particular reason you think that is?

I don't think there's any particular reason. And if I were to guess one—I would really just be guessing—it may just be that we are, as a country and as a continent, not putting that in the “have” column. We're not putting it in the “don't-have” column, but we're not putting it in the “have” column. We're just not even saying, “Wait a minute, we have this.” We're just not factoring it. Possibly because it's right in front of us.

8. You cover the full spectrum of the oil and gas industry. Given the abundant supplies we have here in the U.S. and a commitment from the White House and most in public office to support domestic manufacturing jobs, from your vantage point, are we taking advantage of these opportunities

I'm not seeing any impediments there. Beginning in January, I actually see a great deal of support there, beginning with permitting pipelines that allow the product to get to the demand centers. No, I'm not seeing an impediment there this year like we've seen in the recent past in this industry in the U.S.

9. Finally, on a lighter note, your website bio says that you are an informal student of monetary policy and quantum physics. Those are pretty heady topics. How do you keep up with both of those subjects?

Yeah, like you said, monetary policy is an obvious one for a financial journalist, but it's been pretty much a sleeper the past few years now. With quantum physics, while I'm a journalist, I love science as well. And I see both of them as being the work of inventors with one putting words together and the other putting ideas together.

I've had a life-long interest in wave particle duality and my great personal interest the past couple of years in particular is the science behind and findings of LIGO, the laser interferometer gravitational-wave observatory. There are two observatories in the U.S., and now there's one in Italy as well, where through a somewhat simple technique you can detect gravitational waves from the combination of black holes that have been traveling through space for more than a billion years. It's a way to visualize what happened during the earliest times of the universe. It's pretty fascinating.

[Editor's note: Shortly after this interview, the scientists behind LIGO were awarded the Nobel Prize for Physics for 2017. The story is at https://www.nobelprize.org/nobel_prizes/physics/laureates/2017/press.html.]