

lead interview: chris giancarlo acting chairman, cftc

Chris Giancarlo has yet to receive confirmation from the White House on his status of acting chairman of the CFTC. And with only two members on deck right now at the five-member commission, there's no quorum for him to orchestrate what's emerged as a fairly cohesive, modern, market growth-oriented regulatory strategy. So for now, Giancarlo is focused on making sure the gears are well greased and the "trains run on time" at the agency. "Until I hear otherwise, my job is to keep the CFTC operational and fulfill its core mission ... until I hear otherwise from the White House."

Few if any market watchers believe that Giancarlo won't get the nod for chairman of the CFTC from the Trump team. He's certainly got all the right street and policy cred and he's written a publicly available, bona fide plan forward for the agency (and futures sector) that seems to sync up with the administration's pro-growth, "smart" regulation strategy. But seeing how long it's taken for Cabinet-level appointees to grind through the nomination and confirmation process, it may be a while yet before the CFTC has a formal chief or a quorum. Or will it? FERC seems to be in the same boat suddenly. Yesterday FERC Commissioner Cheryl LaFleur was named acting chief of the agency and current chairman Norman Bay resigned, leaving FERC without a quorum as well. Considering how key these two agencies really are to the president's energy infrastructure and financial regulatory policy platform, we reckon it may not be too long before we see a clear message from the White House on both agencies.

In this power vacuum, we had the opportunity this week for an exclusive, wide-ranging interview with the CFTC's apparent new chairman on many key policy initiatives, his views on market growth,

on killing bad policy and rules, staffing the agency, Fintech, matters of market jurisdiction and his relationship with FERC and other topics.

Giancarlo's agenda for the agency should be little surprise to anybody; he laid it all out pretty clearly at last week's SEFCON VII conference in New York City. And for the fully uninitiated, read his 90-page white paper on policy and regulation released in January 2015. Though the paper did receive a bit of attention at the time, we reckon the number of downloads it's seen from the CFTC site in the past 90 days probably rivals that of New York Times bestsellers. We're also aware that members of the Trump landing team for the agency have read it too. Considering what we're seeing today, the paper was quite prescient. We're sure he drew his five-point punch list (*below*) from last week's speech from the original paper.

1. Ensuring customer choice in trade execution;
2. Repairing swap data reporting;
3. Achieving cross-border harmonization;
4. Encouraging technology or "fintech" innovation; and
5. Cultivating a more forward-looking regulatory culture at the CFTC.

Giancarlo noted this week that in the final sections of the white paper he identified almost a dozen "adverse consequences," of what he describes as the "flawed swaps trading regime." Among them, global fragmentation, the thwarting of technological innovation, market concentration and so on, are exactly what we're seeing now, he says.

"The facts on the ground justify the alternative swaps regime that I posit in the white paper. One of several priorities for me, if I become chairman, is to imple-

ment that approach to swaps. In my view, the execution of swaps transactions should be a licensed endeavor, but the government should not dictate the business model of those enterprises," he says

The best example of this he says, is the broker-dealer model that the SEC operates. The SEC does not tell equity or bond brokers how to conduct their business. "They can be Goldman Sachs or three guys named Joe working in Alexandria, Va. All the SEC requires is that all of these participants are tested and qualified, they have minimum capital requirements, file reports, and so on," he says, "and this is how I see a swap execution facility (SEF) regime. That it is fully compliant with Title VII (swap market regulation under Dodd-Frank) but, we're not telling the SEFs what methodologies to use, RFQ or order books." He says the only thing the agency should be insisting on with SEFs is "high standards."

The immediate fallout from most financial crises we've seen in the last 20 years amounts to a whole lot of burdensome, overly-prescriptive rules. Call it congressional knee-jerk. Giancarlo, like the administration is much more interested in positioning the agency around more of a principles-based rule set, which, in theory, should spark certain growth and innovation across markets and sectors.

Giancarlo sees customer choice in trade execution as absolutely vital for a strong swaps market, any swaps market.

As an example, he says he met with some of the nation's most retail-oriented life insurers yesterday. Household names he says. They were adamant that they wanted to be able to get on the phone with a swap dealer and explain to them a very complicated set of exposures they might have, maybe going out 30 years. "They know if they go to their Bloomberg

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terminal that there is zero liquidity out there. So, they need to talk to somebody. So, what made the CFTC think that the whole world wanted to trade swaps on a machine? There are some instances where technology makes a lot of sense, but not always. For that matter, why even limit technology to just order book or RFQ? The new auction technologies drive everything from Uber to eBay. Maybe that could work in swaps,” he says. CFTC policy he says, took up technology at a certain point and basically said, “You can’t do anything less, and you can’t have anything even more sophisticated.” *So, is this an easy fix?* “Sure it is. The easy fix is to say, you can use any means of interstate commerce ... because that’s what Congress very wisely said originally.” As for process, however, the agency would have to go through a formal rulemaking to make the change.

He says it’s high on the list.

Like the rest of America, we’ve come to learn that what the president may say at a given moment on a given topic may be best considered in a figura-

tive sense, and less literally. In the broad case of Dodd-Frank, or more specifically on things like the Volcker Rule or position limits, we’re hearing a much more measured version of possible reform policy these days than what the president may have said on the campaign trail. Treasury secretary candidate Steve Mnuchin, financial policy adviser Wilbur Ross and even the likes of JPM chief Jamie Dimon and most other Wall Street and Houston Street notables have all said publicly that Dodd-Frank should not be repealed, but rather reformed. Giancarlo is also in this camp.

(Recall that the original Dodd-Frank law had 2,300 pages and 15 titles; the ongoing policy implementation has spawned more than 22,000 pages of rules and details).

“I’ll leave to others what to do about the other 14 titles, I’m only qualified to discuss one: Title VII. And, politics aside, I think Congress got Title VII right. Why was this? Because I think they adopted reforms to the market that were already underway in the marketplace,” he

says. For example, a movement toward clearing was already happening, as in interest rate swaps. Congress didn’t exactly dream it all up. He notes that in 2005, he was involved in the effort with ICAP, and his old firm, GFI, to turn the old Chicago Clearing Corp. into a clearinghouse for CDS. In addition, the reporting of swaps wasn’t exactly a Dodd-Frank innovation either. He says over 10 years ago, the market was already reporting CDS trades to DTCC. Interest rates were moving in that direction too at the time. So, Congress got a hold of the idea and added it to the statute, Title VII.

“It was the right idea. I support swaps data reporting and the clearing of swaps and further, that swaps intermediation (SEF) be a licensed business,” he says. “Congress correctly adopted movements that were already afoot in the industry, some of which I was personally involved with.”

Interestingly, we’ve not heard a peep out of Congress or the Trump camp

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about messing with swaps market regulation under Title VII of Dodd-Frank. It's certainly not in version one of the Financial Choice Act as drafted by Rep. Jeb Hensarling. This of course may change at any time. Giancarlo says that while this is true, "as a constitutionalist, I believe it's not for an independent agency to tell Congress what the law is, rather for us to follow the law."

That said, we're all aware how active former CFTC chairman Gary Gensler was in 'helping' lawmakers draft the Dodd-Frank law in a manner he and a small group of Democratic leaders thought to be correct. Some might even argue that what Gensler didn't like in the statute, he did anyway, as he had the full backing of the White House. But, as they say, that was another time.

So far one of the better punch lists to immerse on the expected financial sector regulation re-do (apart from the one mentioned earlier), was a lengthy letter to the president, inked by current FIA chief and former CFTC chief, Walt Lukken. The gist of it being, "now is the appropriate time to review and simplify the regulatory framework that developed following the financial crisis and determine whether these regulations are in fact meeting their public objectives," and further, "which elements of Dodd-Frank warrant repeal, and which simply require reform." FIA's punch list this week was a little shorter than Giancarlo's was a week earlier, but the similarities are clear: 1. Wholesale review of regulations; 2. Smart regulation and enforcement; 3. Globally accessible markets; 4. Focus on innovation and competition.

We asked the acting chief for his view on the letter and whether a comprehensive review of everything Dodd-Frank in the cards?

"The Europeans are now reviewing everything right now. I think that the drafters of Title VII ... and Gary Gensler reportedly said that at some point down the road we'd have to look at this again. Past commissioners have echoed this and Tim Massad has always talked about tweaking and fine tuning. As EMIR is under full review by the Europeans I don't see anything problematic in a review," he

says. "What I would say is this: As a believer in the core reforms of Title VII, I think it would be a good thing to look at how it was implemented, and ask ourselves, "if we can possibly get to the same place, in a less complicated and less costly fashion?"

Nobody can argue that Dodd-Frank implementation imposed a lot of operational and capital complexity on the marketplace, he says. Read, the cost of doing business is higher than ever. Nor can anybody argue that 1.5 percent average annual growth over the past few years is an awful pace for the US economy. And the new team wants it to be more like 3.5 to 4 percent annual growth? Hmm.

"Is the data we're asking for the data we need? And if we're asking for data that we're not using, is that still an appropriate thing to ask for? That analysis ought to be done."

The type, amount and level of data being requested by regulatory staff from market participants, by way of swap data repositories, has changed many times. The number fields that reporting companies are required to populate has been described to us as "comically long." We've had many conversations in the past with SDR/exchange staff about this moving-target problem they continue to have with the agency. Bottom line is that after eight years of trying, regulators still don't get to assess the data they need to get a clear picture of how healthy the market is (or isn't).

"We need to go back to first principles. Why are we collecting this data to begin with? During the crisis, regulators were unable to map the connectivity between major swap dealers. They wanted to know, if Morgan Stanley failed, would it take down JPM or CITI? I fear that our data collection has gone way beyond that mission," he says. So, for starters, he says "let's get back to first principles, let's work on the mission we were assigned, make it work and then if additional data is necessary we can determine which extra fields are appropriate."

He offered an analogy of his grandmother's cookie jar. The opening was just wide enough for a small hand to grab a single cookie at a time. "If you tried to grab too many, it didn't work. I think

right now we're asking for all the cookies in the jar and we can't get the reporting to work. Let's simplify the whole process."

Then there are position limits and HR 238. Shortly before passing the reauthorization bill for the CFTC last week (Dodd-Frank Wall Street Reform and Consumer Protection Act), lawmakers attached an amendment, which passed largely along party lines, called the Commodity End User Relief Act. The amendment, HR 238, would do many things, but principally it would sort of make optional any federal position limits on commodity derivatives. The bill also requires the CFTC to run a cost-benefit analysis for any future rulemaking, and much more (see the bill at <https://www.congress.gov/bill/115th-congress/house-bill/238>). Position limits have been by far the most contentious regulatory issue regulators have faced, post crisis – or at least it seems that way. Gensler couldn't get the rulemaking done. Massad couldn't get it done either. Will Congress ultimately solve the matter or is will it be third time's a charm for the agency?

Giancarlo is quick to point out that he's tried to stay out of the whole debate on whether the rulemaking on position limits is mandatory or subject to various findings, which was previously litigated in court. "I've tried to focus on a more practical element of this and let congress or the courts determine the rest of it. My question has always been, of the various proposals for limits, do they work? The proposal I inherited when I got here in 2014, my argument was, I don't think it works. The bona fide hedge definition was way too narrow, the exemptions were too narrow. I understand the spot month argument but why were we going out to the outer months?" he asks. Though he's quick to point out that he's not philosophically opposed to position limits, "since we already have them," and the ones we already have work. "But if we're going to make a rule on this, it has to work. I'll leave Congress to sort out whether it's mandatory for us or not or whether we're to use our discretion on position limits." In any case, the current proposal can't see the light of day since the commission lacks

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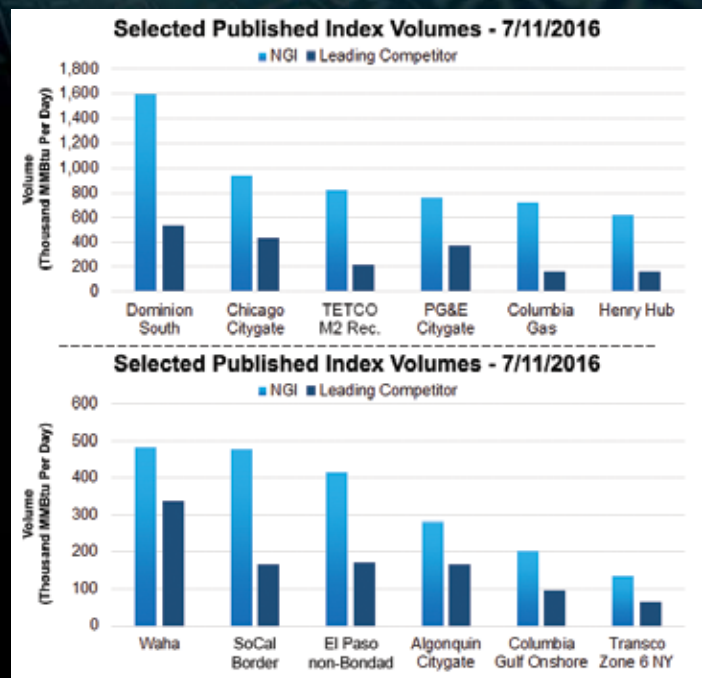
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a basic quorum. And nobody is quite sure which will come first, more commissioners or the reauthorization, but as Giancarlo says, to ultimately solve this matter, “we really need both.”

HR 238 also called for a full cost-benefit analysis prior to any final rulemaking. Giancarlo is a big believer in cost-benefit analysis. Unfortunately, the CEA doesn’t have a very robust cost-benefit analysis provision, unlike the SEC’s marching orders. “Some people say that this analysis just gives opponents of a rule the ability to sue on it. But I think, if you do cost-benefit right, you get the right rule, a better rule. Why would you write a rule and then do the cost-benefit to justify the rule? It should be done at the same time.”

Past chairmen of the CFTC have treated the office of the chief economist with equal amounts of disdain or indifference. Gensler was famous for it. Giancarlo tells us he would likely beef up the office a bit, if he gets the chairman nod. “We will enhance the role of the office of the chief economist. Should we get a more robust cost-benefit mandate – or even if we don’t – I would like to see a strong econometric cost-benefit analysis drive good rulemaking. I think if this agency first took this approach for our SEF rules, we would have had a better set of rules today.”

We seem to recall former commissioner Scott O’Malia making a similar argument, many years ago. “Good cost-benefit analysis produces better rules,” Giancarlo says. On this same tack, he also noted that he thinks the CFTC should be an agency “that also adds value to market participants.” Currently, the agency provides a lot of raw or basic data to the market, but no commentary, no analysis. “We distribute it and we forget about it. I don’t think we fully use the resources we have here to be of any more value to the people who trade in our markets. In particular, end-users.” He added, “Why shouldn’t we become a market intelligence provider as well, in an unbiased fashion? Why couldn’t we interpret the data we produce? I’ve spoken to many end-users in ags and energy who have asked this very question (as it) would help them make better hedge decisions.” Hmm. We can think of two agencies that interpret and analyze the data they make available, the EIA and

FERC. Why not the CFTC? “I’d like to see the CFTC add value to the markets we’re charged with overseeing, by providing useful information, in a format that’s useful and by perhaps adding analysis and commentary.” Perhaps after the SDR mess is sorted out. Looks like the joint will be needing more economists soon.

During the interview, we asked Giancarlo about his views on enforcement and the selection of the next enforcement chief. Last week, Enforcement Director Aitan Goelman, a career litigator in the public and private sectors, announced he would be leaving agency on Feb. 3. The past several chairmen have pushed increasingly more aggressive enforcement strategies, whether they were Republicans or Democrats. One source described the past few enforcement chiefs as a “typical narrow prosecutorial-minded lawyer whose motto is “all law, no economics.” Another noted that the enforcement office seemed more interested in “running up the numbers on prosecutions and sanctions.” Something we’ve referred to as “enforcement box scores.” We asked the acting chairman if this reflects his thinking and if he thought there was only one way to enforce the law. The following day we learned veteran staffer and former director of market oversight, Vince McGonagle, was tagged by Giancarlo as the acting chief of enforcement. Giancarlo’s senior counsel and policy adviser was moved over to head up the office of market oversight and John Lawton has taken over as acting director of DCR. With McGonagle tagged as acting chief of enforcement, it looks like we have our answer.

“I come from the marketplace. I know there are bad actors out there. And there are times when those bad actors need swift and harsh judgment from the federal government. I also think what we need to ask, what every enforcement director needs to ask is, what cases need to be brought to the CFTC and what should be brought by the SROs? We should not be the cop in all instances,” Giancarlo says. Bottom line: A good enforcement director needs to be capable of mounting strong and robust litigation and enforcement and also have the discipline to be able to make judgments as to whether a particular case is right for us or should be brought

to a different level, like the SRO level, or by another federal agency, where we have joint jurisdiction (FERC or SEC). What’s the best use of resources?”

Giancarlo said that he wouldn’t describe the enforcement group under his leadership as less aggressive, but rather as “disciplined aggression.” As for the box scores, he says he’s not “interested in enforcement for the sake of running up the scores.” He noted that several past chairmen have pointed to the tens of millions of dollars that have been returned to the Treasury thanks to aggressive enforcement actions. “For years, this has been pointed to as a primary reason to increase our budget. The numbers may have superficial attractiveness, but it’s clearly been a losing argument. The budget has not moved. Therefore, I think the right balance of aggressiveness and discipline is going to be essential for the new head of enforcement.”

Moving on to market issues, we asked Giancarlo how healthy liquidity is relative to what is optimal, especially for instruments that are other than the core standard delivery point or product? “I think we have real liquidity issues. In the years since the financial crisis, much of the efforts (regulatory) in the US or globally have been to solve or lower the bankruptcy risk issues, whether it’s capital requirements or leverage ratio or restrictions on bank activities. But risk is a constant, it’s like a balloon, you squeeze one end and it comes out someplace else. And so, what we’ve done is lower bankruptcy risk, and raised liquidity risk. I think we now have liquidity risk throughout the system,” he says.

He offered the rising occurrences of major flash crashes – about a dozen – since 2008 (and many minor ones) as an indication of how serious our liquidity issues really are. Prior to 2008, he says there was no evidence of flash crashes. “The singular focus on bankruptcy risk has created other risks in the system, so we need a much more balanced approach to risk in the future.”

We asked for his perspective on the scale of the negative externalities of risk-seeking behavior – such as prop trad-

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ing – from entities that have implicit or explicit calls on taxpayer funds. And further, what his thoughts were on applying the same market behavior rules in specialized, isolated markets, as in “core” markets?

“In a market where we have a deterioration of liquidity, we have no business denigrating or taking for granted the value of the liquidity provided by any liquidity provider, even if it’s prop trading. We need more liquidity, not less. I don’t see any value in restricting liquidity provision from any source, including prop shops. If anything, the liquidity they provide is vitally necessary,” he says. Does this go for all markets? Core and specialized? “We need diversity, we need a jungle with lions and tigers,” he says. “A true, healthy market ecosystem needs all kinds ... inventory-based liquidity that dealers provide, and in the gap, the sort of liquidity that prop shops provide. Short-dated and long-dated liquidity, all of it. What we’ve done is harmed our financial ecosystem, the biodiversity, by removing the dealers. I don’t blame the prop shops for the flash crashes,” he says, “They’re holding up the market. What we need is for the prop shops to not be alone anymore. We need the lions and tigers ... more market biodiversity.”

This path forward will begin with a review of operational capital complexities that have been heaped upon traditional dealer firms, he says. “We need to look carefully at capital rules that discriminate against some market participants and not others.” To the question of certain market participants putting depositors’ money at risk, he says that in a way, all market participants do that, “whether they are a deposit-taking bank or whether they borrow money from a deposit-taking bank,” bottom line is that “we need a more balanced approach to risk, and not just focus on deposit-taking institutions as we’ve done, which I believe has led to a buildup of liquidity risk in our markets.”

How about Reg AT? Recently the comment period was extended, so presumably somebody has been reading the comments that have already been logged in. What’s missing? “I understand that, from a purely selfish point of view, that it would be nice to have instant access to source code without a subpoena, to find wrongdo-

ing,” Giancarlo says. “But, I think it’s constitutionally wrong, on the part of an independent agency to do away with constitutional protections, just to ease our burden.” He says that these protections fall under the 4th and 5th amendments. Others have argued otherwise, of course, viewing code less as property, for example, and more like a record. “I feel that the owners of that property (source code) have rights that go way back. I think we can’t just go skirt around those rights. If Congress wants to take that up, fine. It’s not for us an independent agency.” He notes that the agency has already successfully subpoenaed companies for access to source code. “The current process has not prevented us from getting what we needed in an investigation. So, I think that the rights that property owners have today should not be changed. They deserve their day in court.”

As for direct clearing and FCMs, there’s no easier way to get an FCM into a lather than to mention the trend among exchanges to dis-intermediate FCMs by promoting direct clearing. It is a cause for concern among FCMs who say that there really hasn’t been a debate on both sides of the argument. Giancarlo says he hasn’t developed an opinion on the subject. “I see it as a sort of organic response to market conditions. I plan to study the subject a bit more, have our economists look at it. I think it’s happening at the larger market participant end of the market, so my concern remains, who’s looking after the little guys? What about Dakota Mill and Grain’s hedging operations? They won’t become a direct clearing member. They still need good FCM services. The big guys will always have their needs met. My concern is, considering the consolidation of FCMs lately, the adversity is falling on smaller end of the marketplace.”

Energy matters. He tells us he looks forward to heading up the energy markets advisory committee again ... On FERC and CFTC relations and jurisdictional matters, the history has been spotty. Last year Chairman Massad eased a bit of friction by punting on jurisdictional matters relating to certain forward agreements that both agencies claimed domain over, but that

FERC had managed for many years. Still, the CFTC didn’t relinquish all claims over certain FERC jurisdictional markets. “I think the American people deserve regulators who try to work out their differences and don’t overlap responsibilities. I don’t know who will be the next chairman at FERC (the day following this interview, Commissioner Cheryl LaFleur was named acting chairman of FERC), but it would be one of the very first visits I make,” he says. He says if he’s named chairman, he will have staff scope out the five areas of overlap with the SEC and FERC, and meet with both agency heads, “and divvy it all up. I would try for any way possible to avoid duplication of effort among regulators, whether in enforcement, or whatever.”

One of our final questions had to do with a concept we call “SRO-creep.” That is, the agency heaping ever more oversight and enforcement responsibility on the doorsteps of regulated exchanges or the NFA. We see now that we’ve generally used this term in the pejorative sense, whereas early in this interview, Giancarlo described the process more as having to do with disciplined or practical decision-making. That is, each entity should probably stick to doing what it does best, and worry less about enforcement box scores. That said, it’s also true that Senate Agriculture Committee Chairman Sen. Pat Roberts was adamant recently about the CFTC not seeing a bigger budget, like, ever. So, more responsibility and a smaller budget. It’s a heck of a way to run a key regulatory agency. “One of a couple things can happen,” Giancarlo says. “If there’s no more money, we can try to redefine our mission more narrowly or we can divvy up or rationalize more of our mission to the SROs. I would anticipate, under current circumstances, that the NFA principally and the SROs secondarily, have an important role to play going forward. And that discipline that I spoke about earlier, the decision-making process, whether it’s about enforcement or working with the other federal agencies, is going to have to get stronger.” Stronger discipline? How’s that work? “For example, swap dealer registration ... was always about Wall Street forms. Why are we counting

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energy companies in dealer registrations? Maybe if our money is constant, we have to take a closer look at our creep, to see if we're properly doing our core mission. We need to think about right-sizing our mission in light of our budget."

Finally, financial technology (fintech) and the CFTC. Should fintech firms be banging on the CFTC's door and talking about what cool stuff they've developed? "Yes, absolutely. This president has said he wants to grow the economy, and economic growth in this country comes from technology growth," he says. "It's also

true because we need to make the CFTC a 21st century digital regulator and no longer an analog regulator. If we don't know how blockchain works, how can we ever benefit from it? We need to partner with fintech companies to raise our game." We noted that the CFTC didn't exactly have an office that can specifically play catch with such things. "Stay tuned," he said. Friday morning it was announced that Jeffrey Bandman would be stepping down as acting director of the Division of Clearing and Risk (DCR) to become an adviser on issues related to financial technology. The agency release noted that his new focus on

fintech innovation issues includes "those arising from distributed ledger technology and virtual currency derivatives. His work will concentrate on key immediate priorities, such as identifying challenges to fintech innovation in areas within the CFTC's jurisdiction and proposing ways to address them. He will also focus on ways to heighten the CFTC's engagement with the underlying technology ..." "I've got big plans in this area," Giancarlo told us, "and we have an office in the fintech capital of the world (New York City), so we need to put that to work."

review

By Arthur Jones

The End of Ownership: Personal Property in the Digital Economy

You don't own the ebook you just bought and haven't yet read. The farmer with his new, highly expensive John Deere tractor, doesn't own the software under the hood. Worse, nor can he lift up the hood to execute a minor repair if something goes wrong. You don't own the tracks of music you buy, and you probably can't resell your digital purchase without breaking the law.

Ladies and gentlemen, digital maneuvering by corporate giants, is, according to *The End of Ownership: Personal Property in the Digital Economy* (MIT Press, \$24.95), taking away our rights to our bought-and-paid-for property.

That's the bad news. And, there's no good news (except vinyl) in this book by two lawyers, Aaron Perzanowski (Case Western) and Jason Schultz (NYU).

Not when the Apple cloud server can "disappear" the movie or album you've stored, and leave you with no recourse. "To be clear," they write, "the U.S. law hasn't yet recognized intangible property in the digital media," but the digital media

isn't waiting for the law to catch up – its way ahead.

You own your back copies if you've a subscription to National Geographic; not so with Spotify. That monthly subscription rate "allows you to pay a flat monthly rate for access to large libraries of streaming. End the subscription and Shazam! Everything disappears.

At the other end of the economic digital media equation, "well-established performers like Thom Yorke, David Byrne and Beck" complain of paltry payments to performers and songwriters. OK, the bright spot – vinyl. Miniscule though it be. "The rise in these two very different approaches to consuming music – subscription and vinyl – highlights the importance of consumer choice." Choice is what's disappearing. You can't buy the digital version of the *Compact Oxford English Dictionary*, it's subscription-only.

Meanwhile digital is developing its own legal alphabet soup. There's EULA (End User License Agreement), there's

DRM (Digital Rights Management), there's DCMA (Digital Millennium Copyright Act) and these point out the book's main drawback for the everyday reader.

Despite its enticing cover, *The End of Ownership* is a book to wade through rather than simply read. It takes work.

Is this book important? Vitality.

Perzanowski and Schultz lay that on the line: "Everyday objects are being replaced or supplemented by information. Our cars, watches, and clothes – though still physical – incorporate a layer of code that both increases and constrains their functionality.

"It entails risk. Most troubling, this new economy has the power to redefine or even eliminate the notion of personal property ... and that takes decisions about how to live our lives out of our hands."

Arthur Jones is Energy Desk's regular reviewer.