

**The Block Chain Plunger:  
Using Technology to Clean Up Proxy Plumbing and Take Back the Vote**

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**Keynote Speech**

**Council of Institutional Investors**

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## **I. Taking Back The System**

We've all seen takeovers. Some are friendly. Some are hostile. Some start friendly and turn hostile. Others go the other way around. Today I want to encourage you to start a takeover. I want you, the institutional stockholders of America, to take back the voting and stockholding infrastructure of the U.S. securities markets.

Put a little differently. I want you to become plumbers. You need to fix the proxy plumbing.

The current system works poorly and harms stockholders. But the current plumbers—financial intermediaries—do not have an incentive to fix it. They are making healthy profits in a non-competitive market. They might play around the edges, but real change will have to come from the outside.

The good news is that you have a plunger that you can use to clean up the plumbing. That plunger is distributed ledger technologies, the technology that drives bitcoin.

### **The Problems**

I know you've heard about the problems with the voting and stockholding infrastructure of U.S. securities markets. I am going to quote from comments made by CII's own Amy Borrus in November 2015.<sup>1</sup>

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<sup>1</sup> Statement of Amy Borrus Interim Executive Director Council of Institutional Investors, Corporate Governance Roundtable (Nov. 16, 2015), *available at*, [http://www.cii.org/files/issues\\_and\\_advocacy/correspondence/2015/11\\_16\\_15\\_cii\\_Rep%20\\_Garrett\\_roundtable\\_submission\\_amy\\_borrus.pdf](http://www.cii.org/files/issues_and_advocacy/correspondence/2015/11_16_15_cii_Rep%20_Garrett_roundtable_submission_amy_borrus.pdf) [hereinafter Borrus Statement]. To

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First, she stated that “[the Council] believes that priority should be given to addressing the proxy distribution process and providing end-to-end confirmation that beneficial owners’ shares have been voted in accordance with their instructions.” This is because of the “the difficulty beneficial owners have in determining whether their votes have been received in time and tabulated accurately.”<sup>2</sup>

Second, she agreed with several of the problems identified in the SEC’s 2010 proxy plumbing release. These included “the appropriateness of [self-regulatory organization]-determined distribution fees” and intermediaries determining what services they would provide. She noted that since the release was issued, “Broadridge has unilaterally changed its policy on providing preliminary vote tallies in contested situations, refusing to provide them to shareholders engaged in exempt solicitations and raising serious fairness concerns.” She observed that “several [Council] members have been adversely affected by this change,” that “reform is overdue,” and that “the focus should be on promoting competition and ensuring a level playing field for all participants in the proxy process.”<sup>3</sup>

Spot on. Let’s talk about concrete examples of these problems, then identify a solution.

**The Complexity Of The Beneficial-Nominee System**

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reduce the incidence of distracting and uninformative footnotes, footnotes support every proposition that follow it until a new source is identified.

<sup>2</sup> *Id.* at 11-12.

<sup>3</sup> *Id.* at 11-12.

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The first problem is the complexities created by the nominee system. You all know that most beneficial owners of stock register their shares in the name of Cede & Co., the nominee of the Depository Trust Company, or “DTC.” You may be less familiar with *why* this system exists and how it works.<sup>4</sup>

Historically, to execute a trade, sellers manually delivered stock certificates to buyers or would have new shares issued in the name of a buyer. Brokers primarily used pen and paper to record transfers. But this became unworkable in the 1960s and 70s when trading volumes increased dramatically. Brokerage firms and transfer agents could not keep up with the paperwork. Massive backlogs emerged. Markets had to declare trading holidays. The system wasn’t working.

Under Congressional direction, the SEC’s responded by implementing a national policy of “share immobilization.” To end the physical movement of securities, banks and brokers would place into depositories “jumbo certificates” representing tens or hundreds of thousands of shares. These jumbo certificates would be issued in the name of the depository.

This was a top-down, governmental solution, and it used 1970s era technology—the freezing of shares.

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<sup>4</sup> See generally *In re Appraisal of Dell Inc. (Dell Continuous Ownership)*, 2015 WL 4313206 (Del. Ch. July 30, 2015).

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There were originally three domestic depositories. Today, there is only one, DTC. Almost all U.S. stock is issued in the name of its nominee, Cede. Banks and brokerage firms own DTC, and only they hold accounts at the institution.

There has been an overlay of technical changes on top of the core 1970s concept. Today, DTC accounts for participants' ownership through a Fast Automated Securities Transfer account (its "FAST Account"), which is an electronic book entry system. DTC holds the shares of its custodians in fungible bulk, meaning that it does not subdivide its shares into the separate accounts of the custodians' customers.

By crediting and debiting the accounts of its members, DTC can account for transfers of ownership.<sup>5</sup> For example, if a customer of Chase wants to sell 100 shares of Microsoft to a customer of Bank of America, DTC debits Chase's account by 100 shares of Microsoft and credits Bank of America's account by 100 shares of Microsoft. In other words, DTC facilitates transfers by acting as a central accountant. It tracks book entry movements of securities.

The brokers and banks that are members of DTC hold the shares of their clients, the beneficial owners, in fungible bulk.<sup>6</sup> The members own DTC and benefit from the services it provides.

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<sup>5</sup> See U.S. Sec. & Exch. Comm'n, *DTC Chills and Freezes*, (May 1, 2012), [https://www.sec.gov/oiea/investor-alerts-bulletins/ib\\_dtcfreezes.html](https://www.sec.gov/oiea/investor-alerts-bulletins/ib_dtcfreezes.html).

<sup>6</sup> See Richard W. Barrett, Note, *Elephant in the Boardroom?: Counting the Vote in Corporate Elections*, 44 Val. U. L. Rev. 125, 148-49 (2009).

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The federal solution of share immobilization was like Alexander cutting the Gordian Knot. It solved the immediate problem, but it created a lot of loose ends.

One of those ends was state corporate law. Delaware corporate law is not built to accommodate the nominee system. It assumes that stockholders own shares directly and treats any deviation from direct ownership as a voluntary choice by the stockholder, which it isn't. Delaware law is also internally inconsistent, because while Delaware corporate law works from a non-existent direct ownership model, Delaware also has adopted Article 8 of the UCC. The UCC has been updated to work with the nominee system. Ironically, at the same time that Delaware corporate law assumes that each stockholder directly owns a specific number of shares, Delaware's version of Article 8 treats each stockholder as own a pro rata interest in the fungible bulk.

The flapping ends of the legal system have real world consequences.<sup>7</sup> I recently decided an issue in the appraisal litigation that followed Michael Dell's 2013 management-led buyout of his company. In Delaware, if a stockholder wants to seek appraisal, the "record holder" must "continuously hold[] such shares through the effective date of the merger."<sup>8</sup> In Dell, certain beneficial stockholders sought appraisal of their shares. They notified DTC of this because Cede served as the record holder for the shares. DTC removed the shares from the FAST Account, issued then in a paper certificate, and delivered those

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<sup>7</sup> The following is from *In re Appraisal of Dell Inc. (Dell Continuous Ownership)*, 2015 WL 4313206 (Del. Ch. July 30, 2015).

<sup>8</sup> 8 Del. C. § 262(a).

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certificates to the custodian. Normally, DTC would issue the paper certificates in Cede's name so the record holder would never change. But the custodian banks at issue here had policies preventing them from holding shares issued in the name of others. Instead of Cede & Co., they wanted the shares issued in the name of Kray & Co. So DTC re-issued the shares in the names of the custodial banks. With the name change, the shares were no longer held continuously by the same record holder through the close of the merger.

Constrained by the law, I held they lost standing to seek appraisal. As I explained, "under current law, ownership changes driven by DTC's role in the depository system are regarded as voluntary transfers."<sup>9</sup> The record holder had changed, so the beneficial owners did not meet the continuous ownership requirement.

Personally, I think that is absurd. This was an example of people doing what they should do and then getting caught up by the system. So I proposed an alternative solution to change the law. Since then, this aspect of the case has settled, so the Delaware Supreme Court will not have to rule on the issue. Nor is there any guarantee that they would follow my suggestion.

The upshot for present purposes is that complexities of the nominee system harmed stockholders. In *Dell*, the stockholders in question lost the prospect of any upside from a higher appraisal award. Meanwhile, they had their capital tied up for the approximately two years between the merger's close and when I issued my decision. Because they had no

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<sup>9</sup> *Id.* at \*21.

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standing to seek appraisal, they received no interest for the capital represented by their shares. Let me repeat that: no interest. You might want to point that out the next time you hear a defense-side lawyer say that appraisal is a free option with an excessively generous interest rate.

### Complexity Creates Voting Problems

The nominee system also creates problems for voting. As Amy noted, under the current system, a beneficial holder cannot necessarily obtain end-to-end confirmation as to how its shares have been voted.<sup>10</sup> Another decision from the *Dell* case that shows how the current system makes it difficult for stockholders to vote their shares accurately.<sup>11</sup>

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<sup>10</sup> See also Suneela Jain et al., The Conference Board Governance Center White Paper, Task Force on Corporate/Investor Engagement 34 (2014); Voting Integrity: Practices for Investors and the Global Proxy Advisory Industry, Millstein Center for Corporate Governance and Performance, Yale School of Management 12 (2009). End-to-end vote confirmation has not been available in most circumstances at least until this year. In May 2016, the co-chairs of a securities industry End-to-End Vote Confirmation Steering Committee announced that they have “demonstrated the viability” of a vote confirmation process. (See <http://proxywatch.com/wp-content/uploads/2016/05/End-to-End-Vote-Confirmation-Announcement-5-2016.pdf>.) However, the process apparently will not be implemented in a given case unless the issuer and the tabulator both agree to do so, and it is not yet clear that there is an industry-wide commitment by vote tabulators to cooperate. In August 2016, the Securities Transfer Association (STA) indicated that “the STA is not able to agree that vote confirmation can be considered capable of full implementation across the U.S. market, with or without regulatory changes, on the basis of the pilots conducted to date.” In any case, the beneficial owner does not yet have assurance that it can obtain end-to-end vote confirmation in a given case.

<sup>11</sup> The following information is from *In re Appraisal of Dell Inc. (Dell Dissenter Requirement)*, --- A.3d ---, 2016 WL 3030909 (Del. Ch. May 11, 2016).



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To pursue an appraisal under Delaware law, a stockholder must have “neither voted in favor of the merger . . . nor consented thereto in writing.” T. Rowe Price was the beneficial owner of several million shares for which Cede served as the record holder. T. Rowe had the right to vote its shares as it wished, and DTC had an obligation to ensure that it voted T. Rowe’s shares accurately. But DTC has to fulfill this obligation through a daisy chain of authorizations.

Recall that under Delaware law, a record holder is the party entitled to vote. But under federal law, beneficial owners must direct how shares are voted. To get T. Rowe’s instructions, DTC first had to transfer its state law voting authority to T. Rowe’s participant, State Street. It did this by executing an omnibus proxy in State Street’s favor.

Next, State Street outsourced to Broadridge Financial Solutions the task of collecting and implementing voting instructions from T. Rowe. To carry out that task, State Street gave Broadridge a power of attorney that authorized Broadridge to execute proxies on State Street’s behalf.

Now that it had the authority to vote, Broadridge needed to obtain voting instructions from T. Rowe. T. Rowe used an additional party, Institutional Shareholder Services to help transmit its voting instructions.

To make the voting process more efficient, T. Rowe had a computerized system that automatically generated default voting instructions and provided them to ISS. The default voting instruction for a management-supported merger was to vote in favor.

T. Rowe entered voting instructions to vote against the merger. It checked that instruction not just once, but at least three times. Then, because of a meeting adjournment,

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ISS sent a new record that replaced T. Rowe's first vote. T. Rowe did not know this happened. So T. Rowe's system issued its default response: to vote in favor of the merger. ISS received those instructions and transmitted them to Broadridge. Broadridge received those instructions and abided by them in executing its proxies. Through Broadridge, Cede voted T. Rowe's shares in favor of the merger. T. Rowe did not know this happened. Despite being a vocal opponent to the merger, T. Rowe wound up voting for it. And it lost standing to seek appraisal.

To me, this case shows how complexity breeds opportunities for people to make mistakes. Unnecessary complexity leads to unnecessary mistakes. This is another example of a stockholder doing what it should have done. Checking three times to make sure your votes are correct should be enough.

But a mistake occurred. And the mistake mattered. It cost T. Rowe two-hundred million dollars and bad press.

T. Rowe is not the only stockholder to have suffered from this daisy-chained system of share ownership. It generally works under normal circumstances, but when the system comes under pressure, it breaks down. That should not be surprising. After all, what is a daisy chain? It's a chain of flowers. Under stress, daisy chains break.

Consider the problem of overvoting. In 2006, for example, the New York Stock Exchange reached settlements with four major banks in which they agreed to pay \$2.35

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million to resolve allegations that they cast more votes than they had right to vote.<sup>12</sup>

Overvoting dilutes the value of every other stockholder's vote.

Aside from overvoting, the complexity in the voting system creates opacity and the opportunity for miscalculated votes. Consider the 2008 proxy fight for control of the board of Yahoo.<sup>13</sup> After the vote, Yahoo announced that two of its directors received approval from approximately 80% of stockholders. The period leading to the vote was tense, and an institutional investor holding about 16% of Yahoo's stock was skeptical about the results. It asked Broadridge to double-check the totals. After Broadridge conducted its investigation, Yahoo announced a corrected vote count. A massive error occurred: almost 20% of the vote was misattributed. Apparently Broadridge "forgot" to include millions of votes in its tally.<sup>14</sup> It did not affect the outcome of the vote, but an error of that magnitude is troubling.

Consider also a case in Delaware in which I represented the defendants before going on the bench.<sup>15</sup> In *Transkaryotic*, the inspector of election certified that stockholders had approved a merger by a margin of 2.6%. Then-Chancellor Chandler determined there

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<sup>12</sup> See Kara Scannell, *SEC Probes "Proxy Plumbing"*, Wall. St. J., July 15, 2010, <http://www.wsj.com/articles/SB10001424052748703792704575366910882553810>.

<sup>13</sup> See Yi-Wyn Yen, *Yahoo Recount Shows Large Protest: Yang's Approval At 66, Not 85 Percent*, Huffington Post., May 25, 2011, [http://www.huffingtonpost.com/2008/08/06/yahoo-recount-shows-large\\_n\\_117195.html](http://www.huffingtonpost.com/2008/08/06/yahoo-recount-shows-large_n_117195.html).

<sup>14</sup> *Id.*

<sup>15</sup> See *In re Transkaryotic Therapies, Inc.*, 954 A.2d 346 (Del. Ch. 2008).

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existed evidence creating genuine disputes of fact about whether there were irregularities in validating and counting certain proxies that exceeded the margin by which the merger was approved. The case settled before trial, but the legitimacy of the merger was cast into doubt.

Nor is it really possible to say that the margin was 2.6%. The votes “for” and “against” a proposal purport to provide an exact vote tally, but that is an illusion. The sheer complexity of the current voting system makes precision impossible. Custodians hold beneficial owners’ shares in a fungible bulk.<sup>16</sup> DTC holds the custodians’ shares in fungible bulk. The shares that the custodians and DTC own are constantly being bought, sold, and borrowed. As the SEC has explained, “Because the ownership of individual shares held beneficially is not tracked in the U.S. clearance and settlement system . . . **imbalances** occur.”<sup>17</sup> When those imbalances occur, “**broker-dealers must decide** which of their customers will be permitted to vote and how many shares each customer will be permitted to vote.”<sup>18</sup>

What do broker-dealers do if they hold less shares than they have credited to their customers’ accounts? They determine which customers are permitted to vote and how

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<sup>16</sup> Barrett, *supra*, at 163.

<sup>17</sup> Concept Release on the U.S. Proxy System, Release Nos. 34-62495, Investment Advisor Act Release No. 3052, Investment Company Act Release No. 29,340, 75 Fed. Reg. 42,982, 42,990 (proposed July 22, 2010) [hereinafter Concept Release] (emphasis added).

<sup>18</sup> *Id.* (emphasis added).

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many votes are allocated to each customer.”<sup>19</sup> Some firms “simply reduce the number of proprietary position votes cast.”<sup>20</sup> Gil Sparks, one of our leading Delaware lawyers, has estimated that, in a contest that is closer than 55 to 45%, “there is no verifiable answer to the question ‘who won?’”<sup>21</sup>

One of the reliable features of human nature is that when there is an opportunity to act self-interestedly, and when no one is likely to find out, some will take advantage of the opportunity. Professor Yair Listokin of Yale Law School conducted an empirical study of corporate elections. He concluded that proposals sponsored by management are “overwhelmingly more likely to win . . . by a very small amount than to lose by a very small amount—to a degree that cannot occur by chance.”<sup>22</sup> The finding speaks for itself. Management teams can use opacity in the plumbing system to their advantage, contrary to the wishes of stockholders.

Obviously not all managers are doing this, but some are. I can understand why the management teams and their lawyers would think that was a great thing. I’m not sure why anyone else would.

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<sup>19</sup> *Id.*

<sup>20</sup> *Id.* at 42,991.

<sup>21</sup> Marcel Kahan & Edward Rock, *The Hanging Chads of Corporate Voting*, 96 Geo. L.J. 1227, 1279 (2008) (quoting personal communication between authors and Gilchrist Sparks III).

<sup>22</sup> Yair Listokin, *Management Always Wins the Close Ones*, 10 Am. L. & Econ. Rev. 159, 161 (2008).

The inability to confirm that beneficial holders' stock was timely and accurately voted and tabulated creates doubt about the integrity of the stockholder vote. Meanwhile, federal regulations have created more opportunities for stockholders to vote, and Delaware law is according increased importance to the stockholder vote.<sup>23</sup> These systemic failures undermine the legitimacy of our corporate governance system.

### **Expensive For Stockholders**

So far I've explained why the current plumbing system disfavors stockholders, creates uncertainty as to outcomes, and enables management to manipulate the outcome on close vote. Who pays for this system? You do. And the costs are significant.

Oliver Wyman and affiliates of Santander Bank estimate that there are \$100 billion in annual post-trade and securities servicing fees.<sup>24</sup> Issuers pay more than \$200 million a year to communicate with stockholders alone, exclusive of printing and postage fees.<sup>25</sup> According to the SEC, the "structure and size of fees charged for the distribution of proxy

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<sup>23</sup> See, e.g., *Corwin v. KKR Fin. Hldgs. LLC*, 125 A.3d 304 (Del. 2015); Sec. & Exch. Comm'n, *SEC Adopts Rules for Say-on-Pay and Golden Parachute Compensation as Required Under Dodd-Frank Act*, Jan. 25, 2011, <https://www.sec.gov/news/press/2011/2011-25.htm>.

<sup>24</sup> Oliver Wyman, *Blockchain in Capital Markets: The Prize and the Journey* 20 (2016).

<sup>25</sup> Kevin Kearney, Note, *Proxy.gov: A Proposal to Modernize Shareholder Lists and Simplify Shareholder Communications*, 37 *Hastings Comm. & Ent L.J.* 391, 398 (2015)

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materials” has been “[o]ne of the most persistent concerns that has been expressed to the Commission’s staff, particularly by issuers.”<sup>26</sup>

Concerns exist because Broadridge has monopoly power. It controls over 98% of the U.S. market for proxy vote processing services.

There is only a patina of regulation. SEC rules require *issuers* to pay Broadridge based on contracts Broadridge makes with *DTC* and the *custodians*. As the owners of issuers, stockholders indirectly bear the cost of the fees. The stock exchanges establish the maximum fees Broadridge can charge, but with monopoly power, perhaps unsurprisingly, Broadridge charges the maximum fees allowed.<sup>27</sup>

This is not a competitive market, either as to pricing or services. Getting back to Amy’s comments, she noted that Broadridge had not provided stockholders services they want, like preliminary vote tallies. The contractual relationship suggests the reason. Broadridge did not listen to the stockholders because the stockholders weren’t its clients. The custodians were. They are also the same institutions that own DTC and handle the settling and clearing of trades.

Given the benefits of incumbency, it’s not surprising that the intermediaries who operate this system have not proposed meaningful changes. This is not because they are bad people. This is because they are incumbents.

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<sup>26</sup> Concept Release, *supra*, at 42,995-97.

<sup>27</sup> *Id.* at 42,997.

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So let's review. The voting and stockholder infrastructure is complicated. The costs of that complexity fall on stockholders. One type of cost is uncertainty as to voting outcomes, which management uses to its advantage. Another type of cost is financial. Stockholders pay for the system. The folks who run the system are not affected by the election results and are generating profits in a non-competitive environment. Change will have to come from the outside.

**The Solution**

One possible external solution is to look to the SEC as regulator. The SEC has recognized the myriad problems in the U.S. securities plumbing system. In 2010, it issued a Concept Release to much acclaim.<sup>28</sup> It received over 300 comment letters. But since then, it has not done much of anything. Revamping the system is hard. The SEC has a lot on its plate. Top down reform will take time.

A superior external solution is comes in the form of technological opportunity. Distributed ledger technologies can provide better accuracy, greater transparency, and superior efficiency for settling securities trades and voting in corporate elections.<sup>29</sup> These technologies could reunite legal and beneficial ownership of stock and eliminate many of the problems I identified earlier today.

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<sup>28</sup> See generally J. Robert Brown Jr., *The Proxy Plumbing Release Revisited and the Need for Version 2.0*, 91 Denver U. L. Rev. Online (forthcoming 2016).

<sup>29</sup> See generally David Yermack, *Corporate Governance and Blockchains* (Nat'l Bureau of Econ. Research, Working Paper No. 21802, 2015).



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Let me explain briefly and at a high level how distributed ledgers work.<sup>30</sup> A distributed ledger—as the name implies—is a database of recorded transactions maintained collaboratively by a decentralized network. The ledger tracks transfers in ownership of a particular asset. It is distributed because no single institution maintains the ledger. Instead, members of the network update it through collective action.

New entries to the ledger are added by a process called “consensus.” The method of reaching consensus depends on the specific platform. But the core concept is that actors verify the authenticity of a particular transaction by solving a mathematical problem that involves private and public cryptography. Once someone solves the problem, validators vote on whether or not the solution is correct. If a pre-determined quorum of validators agree that a proposed transaction is legitimate, the ledger updates. Hence, the term “consensus.” If consensus is not reached, the system rejects the transaction.

As an example, consider bitcoin’s consensus process, which is known as “mining.”<sup>31</sup> In mining, validators expend real resources (electricity) to search for a cryptographic key that validates a transaction. When a miner finds the cryptographic key,

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<sup>30</sup> For the following broad concepts concerning how distributed ledgers work, see generally UK Gov’t Chief Sci. Adv., *Distributed Ledger Technology: Beyond Block Chain* (2016) [hereinafter UK Report]; Andrea Pinna & Wiebe Ruttenberg, *European Central Bank, Distributed Ledger Technologies in Securities Post-Trading* (Apr. 2016) [hereinafter ECB Report].

<sup>31</sup> Michael Mainelli & Allstair Milne, *The Impact and Potential of Blockchain on the Securities Transaction Lifecycle* 46 (SWIFT Institute Working Paper No. 2015-007, 2016).

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other users assess whether that key is correct. If a quorum of users agree, the transaction is added to the ledger, and the system provides the miner a reward, a bitcoin. The reward incentivizes people to contribute resources to validate transactions.

Once consensus is reached, the decentralized computer network immediately adds the new transaction to the ledger.<sup>32</sup> The consensus process creates a digital signature for each new entry. Each new entry, in turn, includes a reference to the signature of previously recorded entries. (Hence the “chain” in “blockchain.”) The ledger is public and each participant maintains its own copy, which automatically updates as new entries are added. Therefore, all participants can verify for themselves the source of every transaction on the ledger. The transaction history embedded in the signatures also provides the information the validators use to assess legitimacy of proposed transactions.<sup>33</sup>

The consensus process is secure because updates to the ledger must be verified by public and private cryptography, so the system does a good job in rejecting unauthorized

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<sup>32</sup> See generally UK Report, *supra*, at 17-19. The difference between blockchains and distributed ledgers is that blockchains add new transactions in a block. Distributed ledgers add new transactions as they occur.

<sup>33</sup> To determine transactions authenticity, users are equipped with a public and a private key. A private key is a key that only the user knows, and it links the user to its account on the ledger. Each transaction is signed by a user’s unique private key. A public key is derived from a private key and is the public address for other wallets to send transactions. By using the public key, validators can check to make sure that the person who signed the transaction holds the private key to which the ledger attributes ownership of the particular asset. By having access to the public key and the history of transactions associated with an asset, validators can determine whether the user had enough of the asset that it purported to send. This combination of information allows validators to verify the authenticity of a transaction without knowing the identity of any participant.

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changes to the ledger. Because the ledger is public, users can independently look at transaction histories.

Through this process, beneficial owners can transfer ownership over securities without a central intermediary. As an illustrative example, let's imagine a distributed ledger for trading securities based on a protocol known as Ripple.<sup>34</sup> Imagine that a pension fund wants to buy 100 shares of Microsoft. The pension fund and its counterparty propose that the shared ledger update to credit the pension fund with 100 dollars of Microsoft stock, and the counterparty with \$100 in cash. The pension fund selects a group of actors it trusts, called nodes. Those nodes may be other pension funds who use this system. The pension fund then initiates a transfer, *i.e.*, it proposes making a change to the ledger. The nodes then verify that the transaction is authentic by solving a mathematical problem that will be solvable only if the pension fund and the counterparty have the assets they claim. The nodes do this by evaluating the public and private keys associated with the assets. If a supermajority of nodes solve the problem, then the ledger gets updated. If no consensus is reached, the transaction fails. This happens almost instantaneously. Once successful, the ledger updates to show the pension fund owns 100 shares of Microsoft. At that point, the pension in fact owns 100 shares of Microsoft.

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<sup>34</sup> See generally Marcel T. Rosner & Andrew Kang, *Understanding and Regulating Twenty-First Century Payment Systems: The Ripple Case Study*, 114 Mich. L. Rev. 649, 658-59 (2016).

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Today, DTC must update its ledger in the first instance to initiate a trade.<sup>35</sup> Intermediaries must then update their own accounts each time a new transaction occurs, and reconcile their accounts with counterparties. With distributed ledgers, a central accountant like DTC becomes unnecessary. Custodians become unnecessary. Ownership lies only with beneficial owners. A single distributed ledger would allow straight-through accounting. It is a utopian vision of a share ownership system where there is only one type of owner: record owners.<sup>36</sup> If stockholders take the lead in this, stockholders could share a common ledger of their holdings that allows **them** to keep track of the execution, lending, and settlement of securities transactions.

But wait—there's more. Moving securities is not the only thing these distributed ledgers can enable.<sup>37</sup> Smart contracts allow people to embed contractual obligations in a distributed ledger: people can cause automatic responses to specified conditions or events. So, for example, issuers could provide for automatic transactions to take place in the ledger in response to a specific corporate action or market event, such as the payment of a dividend or a coupon payment. Or, an issuer can send out proxy statements to beneficial holders, as defined by the ledger, at a pre-determined time before an annual meeting. Rather than

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<sup>35</sup> See ECB Report, *supra*, at 19-20.

<sup>36</sup> See Oliver Wyman, *supra*, at 9.

<sup>37</sup> ECB Report, *supra*, at 18.

relying on glorified messengers, dividend payments and proxy statements can go directly to the owner's account.

Smart contracts can also improve the voting system. According to a commentator affiliated with SWIFT, a "standard use case" for smart contracts involves using the ledger to define voting permissions, and using consensus and ledgers to record votes.<sup>38</sup> Because the voting process would have the same degree of integrity and security as the functions accounting for ownership changes, it would be highly secure and accurate. With no intermediaries and a quasi-transparent accounting system, beneficial owners could get end-to-end confirmation of their votes without revealing how they voted.

### The Moment

Someone is going to do this. If a judge can see it, the opportunity is pretty obvious. It's also monetizable. Although bitcoin is a public protocol that anyone can use, and whose changes depend on the community's adoption, you can have "permissioned" distributed ledgers.<sup>39</sup> Permissioned ledgers can provide certain parties absolute control over changes to the system. Permissioned ledgers also can define who has access to the system and the degree of transparency over actors and transactions. In a permissioned ledger, you can charge for access and services.

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<sup>38</sup> Mainelli & Milne, *supra*, at 21; *see also* Aaron Wright & Primavera De Filippi, *Decentralized Blockchain Technology and the Rise of Lex Cryptographia* 36-37 (March 12, 2015) (unpublished manuscript).

<sup>39</sup> UK Report, *supra*, at 17.

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The same financial intermediaries who own DTC understand the threat that distributed ledger technology poses. They are spending big on technology.<sup>40</sup> In 2011, global investment in financial technology companies reached \$4.5 billion. In 2015, global investment in financial technologies reached \$19.1 billion. That's almost a 4x increase over four years. According to Accenture, banks are embracing this movement. For banks, the alternative is obsolescence.<sup>41</sup>

Companies abroad are developing distributed-ledger-based securities trading services.<sup>42</sup> Nasdaq has started a blockchain technology initiative.<sup>43</sup>

This is a *carpe diem* moment. You can take the lead on distributed ledger technology, or you can let the intermediaries replace one intervening institution with another.

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<sup>40</sup> See CBInsights & KPMG, The Pulse of FinTech, 2015 in Review, <https://www.cbinsights.com/research-pulse-of-fintech-2015>.

<sup>41</sup> Accenture, The Future of Fintech & Banking 3 (2015) ("Digital disruption has the potential to shrink the role and relevance of today's banks, and simultaneously help them create better, faster, cheaper services that make them an even more essential part of everyday life for institutions and individuals. . . Banks are acknowledging that they need to shake themselves out of institutional complacency and recognize that merely navigating waves of regulation and waiting for interest rates to rise won't protect them from obsolescence.").

<sup>42</sup> See UK Report, *supra*, at 60.

<sup>43</sup> Luke Parker, *Nasdaq Linq Claims to Have Issued First Securities Over a Blockchain*, Brave NewCoin, Jan. 1, 2016, <http://bravenewcoin.com/news/nasdaq-linq-claims-to-have-issued-first-securities-over-a-blockchain/>.

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Fortunately, Delaware wants to help you. On May 2, 2016, Governor Jack Markell announced the Delaware Blockchain initiative. The Governor has already begun to work with the Delaware State Bar Association to figure out how to incorporate the technology into the DGCL for the benefit of Delaware corporations. Delaware has even hired a blockchain technology company to begin a pilot program to move state archival records onto a distributed ledger. The company promises that for corporations, “the blockchain system will be faster and cheaper than the existing process since it automates a number of processes, including share registry, capital-table management, and shareholder communications.”<sup>44</sup>

Governor Markell explained the reasons for this initiative. “We see companies allocate significant financial resources to correct and validate stock authorization and issuance errors that could have been correctly and seamlessly handled from the outset . . . Distributed ledger shares hold the promise of immediate clearance, immediate settlement and bring with them dramatic increases in efficiency and speed in the sophisticated commercial transactions for which Delaware is known.”<sup>45</sup>

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<sup>44</sup> Giulio Prisco, *Delaware Blockchain Initiative to Streamline Record-Keeping for Private Companies*, Bitcoin Magazine, May 09, 2016, <https://bitcoinmagazine.com/articles/delaware-blockchain-initiative-to-streamline-record-keeping-for-private-companies-1462812187>.

<sup>45</sup> *Id.*

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The bottom line, in Governor Markells's words, is that we want corporations and their stockholders "to take advantage of distributed ledger and smart contract applications."<sup>46</sup>

Approximately a half century ago, financial intermediaries collaborated to create DTC and the current system that governs today. A similar initiative is required today, but you are the people who need to organize. This should not be difficult. You have an organization through which you can coordinate. You have the capital to get it done. You can also prove out a business case against the fees you are paying to Broadridge and the cost of the errors that the current system creates.

The plumbing needs to be fixed. A plunger exists. The takeover doesn't have to be hostile. It can be friendly. But it needs to be done.

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<sup>46</sup> *Id.*