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ARE AUTONOMOUS ENTITIES POSSIBLE?

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ABSTRACT—Over the last few years, I have demonstrated how modern business-entity statutes, particularly LLC statutes, can give software the basic capabilities of legal personhood, such as the ability to enter contracts or own property. Not surprisingly, this idea has been met with some resistance. This Essay responds to one kind of descriptive objection to my arguments: That courts will find some way to prevent the results I describe either because my reading of the business-entity statutes would take us too far outside our legal experience, or because courts will be afraid that robots will take over the world, or because law is meant to promote human (versus nonhuman) rights. As I demonstrate in this essay, such objections are not correct as a descriptive matter. These arguments make moral and policy assumptions that are probably incorrect, face intractable line-drawing problems, and dramatically overestimate the ease of challenging statutorily valid business structures. Business-entity law has always accommodated change, and the extensions to conventional law that I have identified are not as radical as they seem. Moreover, the transactional techniques I advocate for would likely just need to succeed in one jurisdiction, and regardless, there are many alternative techniques that, practically speaking, would achieve the same results.

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INTRODUCTION

In a series of articles that started in the *Northwestern University Law Review Online* in 2014, I laid out a transactional technique that permits legal entities (mainly LLCs) in the United States to be governed entirely by autonomous systems or other software, without any ongoing necessary legal oversight or other involvement by human owners or members.[1] In particular, I raised the possibility that many state LLC statutes permit the development of zero-member LLCs governed exclusively by an operating agreement (and, of course, background common, statutory, and constitutional law). The practical importance of this technique is that it allows software systems to achieve a very close surrogate for legal personhood. If we polled a hundred lawyers, they probably all would agree that a robot could not buy real estate or that a software system could not enter a contract except on behalf of some other legal actor. But the main consequence of my argument is that for practical purposes, autonomous systems can indeed act in these ways under current law, without any special new legal recognition of rights for software.

One reaction to my proposed technique has been honest horror: "The survival of the human race may depend" on rejecting the premises of my argument.[2] The overall benefits and dangers of autonomous legal entities is a topic for another time, however. This Essay addresses a different line of

[1] Shawn Bayern, *Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC*, 108 NW. U. L. REV. ONLINE 257 (2014) [hereinafter Bayern, *Zero-Member LLC*]; Shawn Bayern, *The Implications of Modern Business-Entity Law for the Regulation of Autonomous Systems*, 19 STAN. TECH. L. REV. 93 (2015) [hereinafter Bayern, *Autonomous*]; Shawn Bayern et al., *Company Law and Autonomous Systems: A Blueprint for Lawyers, Entrepreneurs, and Regulators*, 9 HASTINGS SCI. & TECH. L.J. 135 (2017) (discussing variants of this technique in the context of English, German, and Swiss law).

[2] Lynn M. LoPucki, *Algorithmic Entities*, 95 WASH. U. L. REV. 887, 953 (2018).

concern that has arisen about my argument—specifically, whether it is the correct view of LLC statutes in the first place.

In a series of online essays and eventually an article in the *Nevada Law Journal*, Matt Scherer has attempted to show that my legal argument will not work under LLC statutes.[3] The main force of his criticism, though he does not use quite these words, is that my proposed technique is too crazy for courts to tolerate.[4] Maybe, his argument runs, it is an acceptable literal reading of various LLC statutes, but autonomous entities would clearly violate the statutes' intent and structure, and courts would stop them the way they would stop other sorts of technical abuses of statutes and regulations.

The purpose of this Essay is to show that that line of criticism is mistaken and to suggest, simply as a matter of positive law, that my reading of the LLC statutes is correct. To be clear, my blueprint for creating autonomous LLCs is just a product of current statutes; with appropriate legislative will, they could all be repealed in due course. Moreover, my goal here is not to discuss other, non-statutory sources of legal capabilities for algorithms, although there may indeed be others;[5] it is simply to show that the statutes do what I say they do and that it would be both odd and exceedingly difficult for courts to stop the statutes from working in the way I describe. That may seem like a relatively narrow point, but it is important: If even a single state's courts interpret LLC statutes as I suggest, then autonomous entities can be created in that state and would almost certainly, under current law, be recognized elsewhere.

This Essay proceeds in several stages. In Part I, I briefly recap my transactional technique for creating autonomous entities. In Part II, I describe how, as a practical matter, nothing can or will stop this technique from

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[3] Matthew U. Scherer, *Of Wild Beasts and Digital Analogues: The Legal Status of Autonomous Systems*, 19 NEV. L.J. 259 (2019) [hereinafter Scherer, *Beasts*]; Matthew U. Scherer, *Is AI Personhood Already Possible Under U.S. LLC Laws? (Part One: New York)*, LAW & AI (May 14, 2017), [hereinafter Scherer, *Part One*], http://www.lawandai.com/2017/05/14/is-ai-personhood-already-possible-under-current-u-s-laws-dont-count-on-it-part-one [https://perma.cc/S4WE-X2QY]; Matthew U. Scherer, *Is AI Personhood Already Possible Under U.S. LLC Laws? (Part Two: Uniform LLC Act)*, LAW & AI (May 21, 2017), http://www.lawandai.com/2017/05/21/is-ai-personhood-already-possible-under-current-u-s-laws-part-two-uniform-llc-act [https://perma.cc/M53N-N8T9]; Matthew U. Scherer, *Is AI Personhood Already Possible Under U.S. LLC Laws? (Part Three)*, LAW & AI (June 18, 2017), http://www.lawandai.com/2017/06/18/is-ai-personhood-already-possible-under-u-s-llc-laws-part-three [https://perma.cc/68QV-XWR9].

[4] See *infra* Section III.A.

[5] Most simply, an algorithm may direct some of the activities of an existing legal entity even if it does not control the entirety of that entity—precisely to the extent that a conventional contract may do so. Other potential existing legal sources for the capabilities of algorithms include contract law, trust law, and the common law of unincorporated associations.

working if private actors intend for it to work.[6] In other words, my technique is viable de facto, regardless of technical statutory interpretation or legal theory. In Part III, I give a more thorough legal justification for my interpretive view of the LLC statutes, defending it de jure rather than just practically.

I. CREATING AUTONOMOUS ENTITIES

My principal contention is that a novel transactional technique can bestow the practical capacities of legal personhood on any system, such as a software system, with verifiable states or output.[7] Importantly, I am not concerned here with the more recently politicized conceptions of legal personhood that implicate constitutional rights;[8] in the context of American law, I consider those rights to be matters of constitutional or statutory interpretation that have nothing to do with my argument. Instead, I am concerned only with a thin conception of legal personhood implicating "simply the capacity of a person, system, or legal entity to be recognized by law sufficiently to perform basic legal functions"[9] such as entering a contract, owning property, suing, being sued, acting as a principal or an agent, entering into a general partnership, serving as a corporate shareholder, and so on. More technically, "[a] somewhat more formal definition that conveys a similar message is that a legal person . . . is anything to which the law can ascribe any Hohfeldian jural relation, such as a right, duty, or power."[10]

The technique I have outlined has four steps:

(1) An individual member (the "Founder") "creates a member-managed LLC, filing the appropriate paperwork with the state" and becomes the sole member of the LLC.

(2) The Founder causes the LLC to adopt an operating agreement governing the conduct of the LLC. "[T]he operating agreement specifies that the LLC will take actions as determined by an autonomous system,

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[6] Matt Scherer appears to accept this argument. *See* Scherer, *Part One*, *supra* note 3 ("I do not see any provisions that would obviously prevent or even discourage such a setup.").

[7] I use the term "verifiable" in roughly the same way contract-theory economists do. *See, e.g.*, Jean Tirole, *Incomplete Contracts: Where Do We Stand?*, 67 ECONOMETRICA 741, 755 (1999) ("The bottom line of this literature is that the nonverifiability of information by a court is in general no obstacle to the implementation of contracts contingent on this information as long as this information is commonly observed by several parties.").

[8] *See, e.g.*, Burwell v. Hobby Lobby Stores, Inc., 573 U.S. 682 (2014).

[9] Bayern, *Autonomous*, *supra* note 1, at 94.

[10] *Id.* at 94 n.1; *see* Wesley N. Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710 (1917) (defining and classifying "jural relations").

specifying terms or conditions as appropriate to achieve the autonomous system's legal goals."[11]

(3) The Founder transfers ownership of any relevant physical apparatus of the autonomous system, and any intellectual property encumbering it, to the LLC.

(4) The Founder dissociates from the LLC, leaving the LLC without any members.[12]

The result is an LLC with no members governed by an operating agreement that gives legal effect to the decisions of an autonomous system. No other legal person remains behind to govern the LLC internally. Of course, the LLC is still subject both to external regulation and to LLC law. For example, like any LLC, it might face regulatory prohibitions, and the state or other eligible parties might bring an action against it for administrative dissolution. But the autonomous system has gained a significant amount of freedom: it can act legally for an entity without the internal governance of that entity being in the hands of any separate legal person.

If this technique works, it lets software systems interact with the foundational features of the legal system without acting for existing parties. Importantly, the system does not need to be "intelligent" in any specific, predefined way. The system might be simple and achievable with today's technology—say, an online cloud-computing broker or an algorithmic escrow agent—or, in the future, it might be a fully intelligent actor as portrayed in speculative fiction. For a system to work with comprehensive functional autonomy, it would probably need to be smart enough to know how to hire a lawyer if the entity is sued, or else it could be subject to arbitrary default judgments.[13] But the capacity for such hiring could be programmed formulaically (or, for example, a lawyer could be hired on retainer from the start of the entity's existence with the power only to respond defensively to lawsuits) without significant advances in artificial intelligence.

In the outline above, step 1 is clearly uncontroversial; everyone today believes that a single-member LLC is possible, although it is worth noting that even a single-member company was once regarded as a controversial type of entity, arising out of what was considered a loophole several

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[11] Bayern, *Autonomous*, *supra* note 1, at 101.

[12] *See id.*

[13] *See, e.g.*, FED. R. CIV. P. 55(a) ("When a party against whom a judgment for affirmative relief is sought has failed to plead or otherwise defend, and that failure is shown by affidavit or otherwise, the clerk must enter the party's default.").

generations ago.[14] One possible objection to step 2, nicely suggested (although not specifically applied to this transactional technique) by the work of my colleague Lauren Scholz, is that an operating agreement that defers in an open-ended manner to the operation of software may be too indefinite to be enforced.[15] I have responded to that possible objection in previous work.[16] In short, modern contract law appears uncontroversially to enforce agreements far more indefinite than the ones that step 2 requires, and in any event, the agreement can be made as definite as necessary. Step 3 is uncontroversial because LLCs can clearly own tangible and intangible property.[17] The main descriptive objection to the technique overall has been to step 4. In particular, Matt Scherer's objection is that courts simply would not allow an LLC to continue once the only member—in my outline above, the Founder—has dissociated or withdrawn.[18]

II. THE WORKABILITY OF LLCS WITHOUT ONGOING HUMAN INTERNAL GOVERNANCE

For practical purposes, the technique I outlined in Part I is not needed if the goal is to give software systems the practical capabilities of legal personhood. Two different but conceptually similar transactional techniques make it practically possible, perhaps less controversially, for a modern LLC to be governed in an ongoing fashion by an operating agreement (and hence an algorithm with a verifiable state)[19] without regard to ongoing consent by the LLC's members. The first technique uses cross-ownership in order to

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[14] *See* Bernard F. Cataldo, *Limited Liability with One-Man Companies and Subsidiary Corporations*, 18 LAW & CONTEMP. PROBS. 473, 474–75 (1953) ("It is most doubtful whether the concept of corporate enterprise was ever intended or designed to embrace this institution. Nevertheless the one-man company and the family corporation have become familiar modes of business enterprise and, despite occasional questioning by a court or a writer, have generally received judicial sanction and approval."); Warner Fuller, *The Incorporated Individual: A Study of the One-Man Company*, 51 HARV. L. REV. 1373, 1374 (1938) ("One accustomed to accept language at its face value would be at a loss to find authority for the creation or existence of [a one-person] corporation in enabling legislation. With rare exception the one-man corporation has not been expressly authorized under the general incorporation statutes, and if the language of the statutes is to be given its fair import, none would seem even to be contemplated."). The commonplace occurrence of single-member companies today suggests the flexibility of business law, a point to which I will return in Part III.

[15] *See generally* Lauren Henry Scholz, *Algorithmic Contracts*, 20 STAN. TECH. L. REV. 128 (2017) (arguing that contracts that defer to algorithms may be too indefinite to be enforced).

[16] Shawn Bayern, *Artificial Intelligence and Private Law*, *in* RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE 148 (Woodrow Barfield & Ugo Pagallo eds., 2018) [hereinafter Bayern, *Artificial Intelligence*].

[17] *See, e.g.*, REVISED UNIF. LTD. LIAB. CO. ACT (RULLCA) § 402 (2006) (UNIF. LAW COMM'N, amended 2013) (recognizing that "property" may be transferred to an LLC).

[18] *See* sources cited *supra* note 3.

[19] *See* Tirole, *supra* note 7, at 755.

satisfy any concern that legal entities must have members. If membership is formally necessary under an LLC statute—if there is a legal difference between having members and not having members—then groups of LLCs can be created that own one another. The second technique relies on a strong trend in organizational law that permits the governance of legal entities by operating agreement. Operating agreements may establish a default state of affairs and make it practically impossible, because of procedural requirements and other vetogates, for any preexisting legal persons or collections of them to adjust this default state. In practice, both these techniques empower an LLC's operating agreement—or any observable system that the operating agreement recognizes (such as an autonomous software system)—to govern an LLC without the practical possibility of ongoing oversight by LLC members. These techniques should be both relatively uncontroversial and extraordinarily difficult for courts to police. Moreover, if even one state permits them, other states are unlikely to interfere with their operation on the ground that internal governance is a matter of the law of the state in which an entity is organized.[20] Moreover, even without these techniques and purely as a practical matter, organizers of an LLC may achieve similar results through outright defiance of the law, which is extremely difficult to detect or prevent.

A. Cross-ownership

The first of these techniques is achieved as follows:

(1) An individual member (the "Founder") creates two member-managed LLCs, *A* and *B*, filing the appropriate paperwork with the state. The LLCs each start with a single member, the Founder.

(2) The Founder causes each entity to adopt a desired operating agreement that sets the parameters under which each entity operates (e.g., deferring control to an algorithm).

(3) The Founder causes *A* to admit *B* as a member and *B* to admit *A* as a member.

(4) The Founder dissociates from both *A* and *B*.

At the end of this procedure, two entities exist. Each functions just as described in Part I, acting only under the control of the operating agreement, which may defer all decisions to an algorithm.[21] Accordingly, there is no practical need to press the point that the final member may dissociate, leaving a memberless entity.

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[20] *E.g.*, RULLCA § 106(1).

[21] *See* discussion *supra* Part I.

In the classical American corporation, shares held in this form of cross-ownership are prevented by statute from voting because they would otherwise serve as a formal technique to cement control of an existing board of directors.[22] This prohibition is absent from the typical LLC statute, which generally does not attempt to address the policy concerns associated with the takeover of public entities or the defenses of those takeovers by the existing directors.[23] In any event, neither LLC would need to vote as a member of the other LLC to achieve the scheme's functional goal. The "freedom of contract" that conventionally underlies the polices behind LLCs[24] includes the freedom to set up this sort of cross-ownership of voting shares.

B. Vetogates

In 1992, McNollgast (itself an artificial entity of sorts)[25] used the term "veto gates" to describe opportunities for opponents of proposed public legislation to prevent it from being enacted; the notion is now familiar to students of political economy. In short, many actors, practically speaking, need to approve bills before they can become laws.[26] Veto gates—more typically now written as "vetogates"[27]—can also easily arise, accidentally or by design, in private operating agreements written for business entities. For example, it is commonplace to see cases in which a small business entity requires a supermajority of its members to change the status quo.[28] It is also possible—and not at all rare—for LLC operating agreements to create situations in which the members deadlock, leading to indefinite periods during which the entity is paralyzed because nobody can act for it

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[22] *E.g.*, *General Corporation Law*, DEL. CODE ANN. tit. 8, § 160(c) (West 2019) ("Shares of its own capital stock belonging to the corporation . . . shall neither be entitled to vote nor be counted for quorum purposes."). This includes shares belonging to another corporation, "if a majority of the shares entitled to vote in the election of directors of such other corporation is held, directly or indirectly, by the corporation . . . ." *Id.*

[23] *Cf.* RULLCA pref. note (observing that LLCs are most influential outside public capital markets).

[24] *See Limited Liability Company Act*, DEL. CODE ANN. tit. 6, § 18-1101(b) (West 2019) ("It is the policy of this chapter to give the maximum effect to the principle of freedom of contract and to the enforceability of limited liability company agreements.").

[25] McNollgast is a pseudonym used by three distinguished academic commentators on political economy. *See* Linda R. Cohen, *Politics and the Courts: A Comment on McNollgast*, 68 S. CAL. L. REV. 1685, 1685–86 (1995) (discussing McNollgast).

[26] Others, most notably William Eskridge, have analyzed the role of "vetogates" extensively in public law. *See, e.g.*, William N. Eskridge Jr., *Vetogates and American Public Law*, 31 J.L. ECON. & ORG. 756 (2012) (analyzing the consequences of vetogates for judicial review of agencies' interpretations of statutes).

[27] *See generally id.*

[28] *See e.g.*, Fisk Ventures, LLC v. Segal, C.A. No. 3017-CC, 2008 WL 1961156, at *1 (Del. Ch. May 7, 2008) (considering an LLC whose operating agreement required a supermajority vote from its board for "all essential decisions").

effectively.[29] Deadlock is commonplace enough that many LLC statutes aim to address it by giving courts the power to break deadlock by dissolving an entity upon suit by a member,[30] although the granting of such relief is itself extremely rare because courts are concerned about destroying potentially productive businesses and picking sides among equally blameless (or blameworthy) parties.[31] Moreover, when dissolution for deadlock is granted, it is ordinarily judged in view of the policies of the operating agreement. As a New York appellate court put it, "the only basis for dissolution [for deadlock] can be if [the entity] cannot effectively operate under the operating agreement to meet and achieve the purpose for which it was created."[32]

Accordingly, it is not difficult for the author of an LLC's operating agreement to write it in such a way that the owners, members, or managers—even if they do exist—are powerless figureheads. The imagination of lawyers is the only limit on how comprehensively such agreements might prevent changes to the status quo. To put it differently, even if the technique I described in Part I is not possible, drafters of operating agreements can approach its result—the triumph of an existing operating agreement over ongoing governance by members—asymptotically. A supermajority voting requirement is a simple, commonplace first step toward that destination, but more creative techniques are possible.

Imagine, for example, the appointment of 1,000 members to a new LLC. The members are chosen largely at random, with little connection to the other members, and with wide geographical and social dispersion. Each of these members is paid a nominal sum to agree to become a member and is assured that the limited-liability status of the entity means that they incur no, or at most negligible, personal risks for accepting that status.[33] Then, imagine that the operating agreement requires that any new business decisions (whether ordinary or extraordinary),[34] or any amendments to the

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[29] *See id.*

[30] *E.g.*, RULLCA § 701(a)(4)(B) (2006) (UNIF. LAW COMM'N, amended 2013) (granting judges the ability to dissolve an LLC when "it is not reasonably practicable to carry on the company's activities and affairs in conformity with the certificate of organization and the operating agreement").

[31] *See, e.g.*, *In re* Arrow Inv. Advisors, LLC, C.A. No. 4091-VCS, 2009 Del. Ch. LEXIS 66, at *8 (Del. Ch. Apr. 23, 2009) ("Given its extreme nature, judicial dissolution is a limited remedy that this court grants sparingly."); *In re* Dissolution of 1545 Ocean Ave., LLC, 72 A.D.3d 121, 131 (N.Y. App. Div. 2010) ("Dissolution is a drastic remedy").

[32] *In re* Dissolution of 1545 Ocean Ave., LLC, 72 A.D.3d at 130.

[33] If this structural legal guarantee is not enough, the organizer may pay for further private insurance for the members or simply compensate them more for accepting the risk.

[34] The law of unincorporated businesses often draws a distinction between matters in the "ordinary course" of business, typically governed by default by a majority vote, and other matters, which typically require by default a supermajority or unanimity. *See, e.g.*, REVISED UNIF. P'SHIP ACT § 301 (UNIF. LAW COMM'N 2013).

agreement itself, require 990 of these 1,000 members to constitute a quorum and agree. It would probably be difficult to get 100 of these members into the same meeting, much less to get 990 of them to agree on anything. And to prevent even the possibility of agreement, 20 of them could be asked to agree in advance, for yet another nominal sum, to vote "no" on every matter presented in the LLC's management meetings. Classical organizational law (such as the law of corporations in the early- and mid-1900s) prevented or at least inhibited private parties from structuring the internal governance of an entity in this manner, in particular, by closely scrutinizing private agreements dictating how to vote.[35] Indeed, classical corporate law required annual meetings of shareholders,[36] but LLC statutes ordinarily dispense with this requirement.[37] The animating principle of modern organizational law, which reaches its fulfillment in the law of LLCs, is again "freedom of contract" in matters of internal governance; these sorts of voting agreements are expressly permitted by modern law, even in corporations.[38] They should be uncontroversial in LLCs.

Of course, such extreme governance techniques will not ordinarily be necessary. A small group of individuals all interested in giving an autonomous system legal personhood probably would be sufficient to achieve the same result. Four humans in favor of my project could create an entity governed by algorithm, all remain members, and write an operating agreement that requires their unanimous consent to interfere with the algorithm, along with private contracts not to interfere or seek dissolution.

Importantly, however, adding vetogates is meaningfully different from a simpler structure in which a Founder remains attached to an LLC just to keep the LLC from being dissolved by a legal system that requires businesses to have owners. That sort of arrangement may be effective in giving an algorithm the potential to have legal consequences, but it is fragile because it depends on the Founder's ongoing cooperation. It provides no new meaningful freedom to the entity or the autonomous system that it was meant to enable, and it permits the Founder to appropriate any of the LLC's gains selfishly because the Founder (as the only member) could simply, by default, rewrite the LLC's operating agreement at any time.[39] But vetogates,

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[35] *See, e.g.*, MELVIN ARON EISENBERG & JAMES D. COX, CORPORATIONS AND OTHER BUSINESS ORGANIZATIONS 464–65 (10th ed. 2011) (discussing the history of restrictions on voting agreements in corporate law).

[36] *E.g.*, MODEL BUS. CORP. ACT § 7.01 (AM. BAR ASS'N, amended 2016).

[37] *See, e.g.*, RULLCA § 407(d) (2006) (UNIF. LAW COMM'N, amended 2013) ("An action requiring the vote or consent of members under this [act] may be taken without a meeting").

[38] *E.g.*, MODEL BUS. CORP. ACT § 7.31 (AM. BAR ASS'N, amended 2016).

[39] Not surprisingly, LLC statutes are often flexible enough to permit creative solutions even to this problem. For example, an LLC's operating agreement might adopt an extremely onerous amendment

complicated amendment procedures, and simple supermajority requirements among even a small group of individuals all present meaningfully more practical freedom for the entity, and they all make it less likely that any individual will be able to act selfishly in order to appropriate the assets of the entity.

In short, an operating agreement's power (as against the current members' or managers' present intent) is not an all-or-nothing proposition; agreements can be made more or less powerful simply by restricting the practical ability of members to interfere with their operation. Apart from the rarely exercised statutory power to dissolve an LLC because of deadlock—which, additionally, an organizer may attempt to hedge against through private contracting, particularly if the potential suits for deadlock are foreseen when an entity is organized—vetogates confer an indefinitely large amount of power on the operating agreement at the expense of the current members or managers.

A quick reminder at this stage may be helpful, before I justify the legality of Part I's technique: Just as for Part I's technique, for the propositions about cross-ownership and vetogates that I have made here to be correct and practically significant, only one state would need to endorse them. Other states will not, under current law, interfere in the internal governance of an entity.[40] To the extent that autonomous, algorithmically controlled entities become popular over time, organizers could easily choose the jurisdictions most favorable to their chosen vetogates or cross-ownership strategies.[41]

C. Defiance, Obfuscation, and Nullification

There is a further practical consideration that would permit the same result as Part I's technique even if courts refused to honor it. LLC operating agreements are private documents, generally not available to nonparties or

procedure that is unlikely ever to be satisfied even if the LLC has only one member. Under RULLCA, "the means and conditions for amending the operating agreement" are subject to the operating agreement itself. RULLCA § 110(a)(4). And RULLCA explicitly permits an operating agreement to "specify that its amendment requires the approval of a person that is not a party to the operating agreement or the satisfaction of a condition." *Id.* § 112(a). In other words, LLC statutes permit vetogates even for conventional, single-member LLCs.

[40] *See*, *e.g.*, VantagePoint Venture Partners 1996 v. Examen, Inc., 871 A.2d 1108, 1113 (Del. 2005) ("It is now well established that only the law of the state of incorporation governs and determines issues relating to a corporation's internal affairs.").

[41] *Cf.* William L. Cary, *Federalism and Corporate Law: Reflections Upon Delaware*, 83 YALE L.J. 663 (1974) (initiating a long-running debate about how the motivations for the choice of Delaware law among corporate organizers should influence legal policy at the national level).

to courts or governments in the abstract.[42] To oppose either of this Part's techniques, or Part I's central technique, a third party would have to discover that it was being used and then prove it to the court. In the unlikely event that uses of these techniques were discovered by a private third party, those behind the techniques would have the opportunity to refashion private agreements as they saw fit—to cure anticipated legal problems for the duration of a court case, or even simply to dishonestly represent the nature of the relevant entity's internal governance.[43] And in the case of cross-ownership, the two related entities may be formed in different states, potentially complicating discovery and even jurisdiction.

There is also, of course, a simpler sort of defiance: an algorithm or its promoter may simply organize a functionally memberless LLC and falsely specify the name of a member. In short, we probably could not stop algorithms from engaging in basic legal relationships even if we wanted to do so.

III. THE LEGAL SOUNDNESS OF AUTONOMOUS ENTITIES UNDER CURRENT STATUTES

Part II demonstrated that LLCs that are not subject to internal-governance oversight from existing legal persons are practically workable and probably unavoidable even if courts were inclined to oppose them. This Part extends the argument by showing that courts, in their role as interpreters of state LLC statutes, are unlikely to oppose them as a matter of law.

To be clear, when I speak of the "legal soundness" of zero-member LLCs, I refer only to their possible long-term existence under current LLC statutes. Several attendant issues are beyond the scope of this Essay, including (1) whether as a policy matter the LLC statutes should be reformed, and (2) whether memberless entities functionally controlled by software raise new problems for courts, such as whether they make it too difficult to police fraud because fraud requires human intent. To put it differently, my argument here just concerns practical statutory interpretation and business law; it is aimed at courts and commentators who are interested in courts' actions, not in future decisions by legislatures or authors of model

[42] For example, RULLCA does not require that operating agreements be filed with the state, only that a "certificate of organization" containing such basic information as the company's name, address, and registered agent be filed. *See* RULLCA § 201.

[43] As a formal matter, an actor willing to be dishonest has an entirely open canvas until any particular document needs to be disclosed, at which point only those particular documents serve as ongoing constraints. *Cf.* SANJEEV ARORA & BOAZ BARAK, COMPUTATIONAL COMPLEXITY: A MODERN APPROACH 260–61 (2009) (describing "adversary arguments" in analyzing complexity).

statutes. That said, in a common law system, evaluating what courts will do cannot and should not easily be separated from appropriate legal policies.

This Part does two things: Section III.A responds to criticism of my recent work that Matt Scherer leveled in a series of blog posts and a recent article.[44] Section III.B responds to what I believe is a potentially sounder and more general anxiety that motivates this type of criticism.

A. Response to Criticism

Based on his series of blogged essays and a recent article in the *Nevada Law Journal*, Matt Scherer clearly finds the outcome of Part I's technique to be objectionable. His legal and technical argument against it is extremely thin, however, and rests largely on statutory definitions (rather than statutory rules) and on what I believe are several misunderstandings of business law and LLC statutes.

1. Statutory Definitions

Apart from general arguments about the absurdity of possible results, which I will address later,[45] Scherer's main legal argument is that definitions in LLC statutes, such as those that declare an LLC to be "an unincorporated organization of one or more persons,"[46] prevent the existence of memberless LLCs.[47] As he puts it, because of these definitions, "an LLC ceases to be an LLC once it becomes memberless."[48] This is a literalistic form of argumentation that aims to give substantive effects to casual statutory definitions written without those substantive effects in mind, and is not the correct way to interpret the statutes.

Scherer's main definition-based argument about the Revised Uniform LLC Act (RULLCA) and RULLCA-derived state statutes[49] is that courts

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[44] *See* sources *supra* note 3.

[45] *See infra* Section III.B.

[46] N.Y. LTD. LIAB. CO. LAW § 102(m) (McKinney 2019).

[47] *See* Scherer, *Beasts*, *supra* note 3, at 266–70, 277. Similar arguments have been made before. For example, in a written debate with Don Weidner, Bob Hillman argued that the Revised Uniform Partnership Act's (RUPA) initial definition of a partnership as "an association of two or more persons," REVISED UNIF. P'SHIP ACT § 101(6) (UNIF. LAW COMM'N 2013), means that a partnership must dissolve when the penultimate partner dissociates. Robert W. Hillman & Donald J. Weidner, *Partners Without Partners: The Legal Status of Single Person Partnerships*, 17 FORDHAM J. CORP. & FIN. L. 449, 453–56 (2012). Don Weidner, the Uniform Law Commission reporter for RUPA, responded as follows:

> I obviously think you are asking the definition of "partnership" to do too much by effectively operating as a special dissolution rule whenever partnerships no longer meet the language of the definition. RUPA contains three separate articles on partnership breakups, defining when and how liquidations versus buyouts are to take place.

Id. at 457.

[48] *See* Scherer, *Beasts*, *supra* note 3, at 265.

[49] Scherer uses Florida, Washington, and Wyoming as examples for this purpose. *See id.* at 277 n.86.

would not "recognize"[50] a memberless LLC under RULLCA-derived statutory law because these statutes require "an LLC to be member- or manager-managed."[51] The statutes he cites do not in fact require this expressly, but, putting that aside, his argument fails even without looking beyond statutory definitions. RULLCA, along with the three state statutes he examines, defines a "member-managed LLC" simply as "a limited liability company that is not a manager-managed limited liability company;"[52] the internal logic of the definitions themselves prevents them from having any substantive effect. In other words, Scherer's argument is that if an LLC statute says (or even implies) that an LLC must be member-managed or manager-managed, some substantive consequence must follow, but the statutory definitions make clear on their own that the phrase "member-managed or manager-managed" is a tautology, literally empty of substantive meaning.[53]

Scherer's main definitional argument under New York's statute—that an LLC is "an unincorporated organization of one or more persons"[54]—is undercut by the same sentence in which the definition itself appears. That sentence purports to provide a definition "unless the context otherwise requires."[55] Clearly this definition cannot override the substantive requirements of a separate operative section that explicitly provides for conditions under which an LLC can exist with no members.[56] That section of New York's LLC statute begins, "A limited liability company is dissolved and its affairs shall be wound up . . . at any time there are no members . . . ."[57] The statute could have stopped there. It did not. The section continues by providing for situations in which a New York LLC does not dissolve when there are no members.[58] In other words, the definition is inconsistent with,

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[50] *Id.* at 277.

[51] *Id.* As background, a member-managed LLC structurally resembles a partnership, where individual owners make decisions about how to operate a business, whereas a manager-managed LLC structurally resembles more complex entities with a separation between ownership (membership) and control (management).

[52] RULLCA § 102(12) (2006) (UNIF. LAW COMM'N, amended 2013); *see also* FLA STAT. ANN. § 605.0102(41) (West 2019); WASH. REV. CODE ANN. § 25.15.006(11) (West 2019); WYO. STAT. ANN. § 17-29-102(xiii) (West 2019).

[53] The same analysis applies to similar claims like "RULLCA allows only 'members' and 'managers' to manage an LLC . . . ." Scherer, *Beasts*, *supra* note 3, at 274. The claims misunderstand the definition of "member-managed."

[54] Scherer, *Beasts*, *supra* note 3, at 267–68 (emphasis omitted); N.Y. LTD. LIAB. CO. LAW § 102(m) (McKinney 2019).

[55] N.Y. LTD. LIAB. CO. LAW § 102(m).

[56] *Id.* § 701(a)(4).

[57] *Id.*

[58] *See id.*

and clearly not meant to override, the notion that an LLC can exist temporarily without members. If the definition does not exclude that case, why would it help us determine the maximal length of a period without members?

Scherer also uses statutory references to "members" and "managers" (in such statutory phrases as "management of the limited liability company shall be vested in its members who shall manage the limited liability company")[59] to infer that the continued presence of those managers or members is necessary for the LLC to exist.[60] But many LLC statutes include similar definitions and uses of the words "members" or "managers" even while explicitly permitting the possibility of memberless LLCs for various purposes. For example, Virginia's LLC statute has many of the conventional characteristics of the LLC statutes described in Scherer's article, but it explicitly addresses "the case of a limited liability company that has no members as of the commencement of its existence,"[61] indicating clearly that an LLC needs no members to be formed.

More generally, courts have rejected the argument that statutory definitions override the operative provisions of statutes,[62] and since 1953, the Uniform Law Commission's drafting rules have contained the simple maxim: "Do not include substantive provisions in a definition."[63] The features of statutes that I have discussed here demonstrate why: definitions are often more general than the context that specific, substantive statutory provisions require. In any event, most LLC statutes do not in fact define an LLC as an entity that has members, and New York's, which does, contains language in the definition itself that ensures the definition will not conflict with the statute's substantive provisions.

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[59] *Id.* § 401(a).

[60] *See* Scherer, *Beasts*, *supra* note 3, at 266–69.

[61] VA. CODE ANN. § 13.1-1038.1(A)(3) (2019). Unlike New York and RULLCA, Virginia does not even provide a default time limit for the appointment of a new member following the dissociation of the last member, a point I will discuss *infra*. *See id.* § 13.1-1038.1(A)(4).

[62] *See, e.g.*, Katt v. City of New York, 151 F. Supp. 2d 313, 340 (S.D.N.Y. 2001) ("For the definition . . . does not purport to be an operational section of the statute that explains the scope of its substantive provisions—it is not, for example, a provision that says, 'The following types of entities are required to comply with this Act.' Rather, the provision . . . simply defines a term, used at certain places in the statute . . . ."); Hamilton v. Brown, 4 Vet. App. 528, 536 (1993) ("Definitions, whether statutory or regulatory, are not themselves operative provisions of law.") (citing NORMAN J. SINGER, SUTHERLAND STAT. CONST. § 27.02, at 459 (4th ed. 1985)).

[63] DRAFTING RULES FOR UNIFORM AND MODEL ACTS, Rule 302(e) (UNIF. LAW COMM'N 2012), available at https://www.uniformlaws.org/viewdocument/drafting-rules-2012 [http://perma.cc/77FY-5M3T]; *cf. Origin, Nature and Scope of the National Conference of Commissioners on Uniform State Laws*, 62 HANDBOOK NAT'L CONFERENCE OF COMM'RS ON UNIF. STATE LAWS 321, 344 (1953) ("Do not write substantive provisions or artificial concepts into definitions.").

Scherer's own analysis occasionally shows why literalistic uses of statutory definitions and similar non-operative provisions often lead to interpretations that cannot possibly be correct. For example, in his blog posts on this subject, he argues that in New York's LLC act, "the statutory context strongly indicates that the managers or member-managers must be *natural* persons"[64] because the statute refers to a manager as "hi[m] or her."[65] This is a strikingly incorrect reading of the statute. For decades, it has been commonplace for one entity to manage another, or to be a member of another, in New York and elsewhere.[66] In his most recent article, Scherer does not make this claim but instead evocatively describes the New York statute's use of personal, gendered pronouns as a "legislative Freudian slip" that is "a powerful—if not inescapable—signal that the legislature intended natural persons to exercise ultimate control over LLCs."[67] This is a milder claim, but it is similarly misplaced and puts far too much importance on the details of non-operative statutory text. The imprecise use of personal pronouns is a commonplace statutory artifact that results from imprecision in drafting, much as statutes used to use male pronouns to refer to all people.[68]

2. *Business-Law Foundations*

Additionally, because of contextual features of business law that Scherer sometimes neglects, his arguments would prove far too much. That is, his reasoning offers a perspective disconnected from some nuances of business law and practice, and instead it applies basic statutory-analytical techniques to complex, context-rich business-law statutes. It is one thing to say that legal personhood for robots is an idea too crazy for American courts and to stop there;[69] it is another to try to demonstrate it as a technical matter of organizational law.

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[64] Scherer, *Part One*, *supra* note 3.

[65] *Id.* (citing N.Y. LTD. LIAB. CO. LAW § 409(a) (McKinney 2019)).

[66] The rise of that practice came with the use of corporations as general partners of limited partnerships, to combine the tax advantages of limited partnerships with the full limited liability of corporations. For a general discussion of the history, see Donald J. Weidner, *The Existence of State and Tax Partnerships: A Primer*, 11 FLA. ST. U. L. REV. 1 (1983).

[67] Scherer, *Beasts*, *supra* note 3, at 268 n.36.

[68] Statutes commonly use gendered personal pronouns in contexts where they may apply uncontroversially to both business entities and natural persons. *E.g.*, FLA. STAT. § 655.417(3) (2019) ("[T]he action taken does not prejudice the right of a creditor of the participating or converting financial institution to have his or her debts paid out of the assets thereof . . . ."); 55 ILL. COMP. STAT. 5/5-12009.5(b) (2019) (referring explicitly to the possibility that "the petitioner or applicant is a corporation" and later to "the petitioner or applicant, or his or her principal").

[69] I address this type of more general argument *infra* Section III.B.

Scherer's most significant mistake is to assume, contrary to law and practice, that memberless entities themselves are simply outside the contemplation of modern organizational statutes. The innovation of my earlier work was to demonstrate that the flexibility of modern entity law can empower *algorithms* to have legal effect—that, effectively, the rise of organizational forms based on contractual agreement (like the LLC) rather than preordained structure (like the classical American corporation) has implications for algorithms that can be expressed as or recognized by agreements. But my contribution was not to invent the notion of a memberless entity in the first place—that notion is in fact explicitly authorized by many modern LLC statutes and is widely in use, although, of course, for more limited purposes than my analysis suggests is possible.

Virginia provides perhaps the clearest example overall. Virginia's LLC statute, as I noted in the last section, explicitly allows LLCs to be created without members, and it provides no default statutory time limit for memberless LLCs.[70] Similarly, North Carolina's current LLC statute refers to the possibility that "initial members are not identified in the articles of organization."[71] That section replaced an older version of the statute that specified that the organization of an LLC required "one or more initial members," but that requirement was removed.[72]

RULLCA itself draws from these sources and explicitly allows LLCs to be created without members, providing expressly for a situation where "the company will have no members when the [Secretary of State] files the certificate."[73] This is not an accident; as RULLCA's co-reporter has described, it was an intentional decision.[74] Certainly the sort of "shelf LLCs"—that is, LLCs that are warehoused on a virtual shelf until their creators are ready to use them—that these provisions authorize are different from an autonomously functioning entity, but most of Scherer's technical statutory argument does not distinguish between the two. Instead, his arguments rest on the proposition that a memberless entity in the first place

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[70] *See supra* note 61 and accompanying text.

[71] N.C. GEN. STAT. § 57D-2-20(c) (2013).

[72] N.C. GEN. STAT. § 57C-2-20(c) (2005). As another example, Minnesota's LLC formation statute explicitly contemplates a state of affairs where there is an operating agreement but no members. *See* MINN. STAT. § 322C.0701 subdiv.1(3) (2015). Its default dissolution provision exempts the case where no members have yet joined. *Id.* ("[F]ollowing the admission of the initial member or members, the passage of 90 consecutive days during which the company has no members" will by default cause dissolution).

[73] RULLCA § 201(b)(3) (2006) (UNIF. LAW COMM'N, amended 2013).

[74] Carter G. Bishop, *Through the Looking Glass: Status Liability and the Single Member and Series LLC Perspective*, 42 SUFFOLK U. L. REV. 459, 471 (2009) ("This so-called 'shelf LLC' attracted considerable debate in the drafting of the Revised Uniform Limited Liability Company Act (RULLCA). As a result, RULLCA included its own version of the 'shelf LLC.'").

is somehow beyond the pale—something that our legal system has never imagined, does not recognize, and would not possibly tolerate. This is simply untrue, and the explicit recognition of memberless entities by several statutes—and indeed by the uniform statute drafted by the Uniform Law Commission—should put to rest the idea that the statutes are incompatible with the existence of zero-member entities and that the drafters did not contemplate such entities.

Scherer expresses a few other notions about business entities that are either outdated or that otherwise do not reflect modern entity law. These observations may not matter directly for my argument about autonomous entities, but they are worth addressing because modern business-entity law is subtler than even many lawyers realize.

Scherer rests a significant part of his description of entity law on a New York corporate law case from 1934.[75] Indeed, he quotes a full passage from that case to make the point that a corporation ceases to have any legal existence—including any capacity to file a lawsuit—after it is dissolved.[76] But this is not the modern understanding. For example, the modern Model Business Corporation Act (Model Act) gives dissolved corporations many powers that easily qualify them for legal personhood under my definition,[77] including the power to collect and sell assets.[78] Contrary to Scherer's proposition that a dissolved corporation "would not have standing to sue to vindicate rights the entity might have had when it still was in active existence,"[79] the Model Act explicitly declares that, today, "[d]issolution of a corporation does not . . . prevent commencement of a proceeding by or against the corporation in its corporate name."[80]

Of course, my argument does not concern corporations; it suggests possibilities primarily for modern LLCs. There too, however, dissolution has a more complex meaning than Scherer gives it credit for.[81] Contrary to what

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[75] *See* Scherer, *Beasts*, *supra* note 3, at 262 ("The dissolution of a corporation implies its utter extinction and obliteration as a body capable of suing or being sued . . . .") (quoting MacAffer v. Bos. & M.R.R., 273 N.Y.S. 679, 686 (N.Y. App. Div. 1934), *rev'd*, 197 N.E. 328 (N.Y. 1935)). *MacAffer* was an appellate case that, interestingly, the New York high court reversed, holding as follows: "[A company] continues to hold its property for the benefit of those equitably entitled to it. If there be dispute as to whether the conditions have been performed, upon which corporate rights and powers have been granted, it retains 'life' sufficient to defend its right to exist." MacAffer v. Bos. & M.R.R., 197 N.E. 328, 330 (N.Y. 1935).

[76] Scherer, *Beasts*, *supra* note 3, at 262.

[77] *See supra* Part I.

[78] *See* MODEL BUS. CORP. ACT. § 14.05(a) (AM. BAR ASS'N 2016).

[79] Scherer, *Beasts*, *supra* note 3, at 262.

[80] *Id.* § 14.05(b)(5).

[81] *See* RULLCA § 702(b)(2)(C) (2006) (UNIF. LAW COMM'N, amended 2013) ("In winding up its activities, a limited liability company . . . may . . . prosecute and defend actions and proceedings, whether

Scherer suggests, an entity may last years after dissolution if the winding-up period takes that long, during which time the entity may be wound up by nonmembers. These nonmembers may be bound contractually to the entity or to previous members.[82] This means, of course, that even dissolution need not be a bar to empowering algorithms under law; even a dissolved entity could be controlled by an algorithm, at least for the purposes of winding up. To put it differently, even if it were shown that a particular attempt to create an autonomous entity has necessarily triggered the dissolution provision of some statute, that does not cause the entity to cease to exist on its own; it merely begins a new phase of the entity's life.[83]

Scherer also misapplies the distinction between mandatory rules and default rules in LLC law and as a result, he overstates the limitations on operating agreements under modern LLC statutes.[84] For example, Scherer suggests that under RULLCA, an operating agreement cannot govern "the circumstances under which a LLC must dissolve"[85] because RULLCA does not explicitly authorize the operating agreement to do so. But the statute is clear about limitations on the operating agreement's power, and it explicitly permits the agreement to govern "the activities of the company and the conduct of those activities."[86] RULLCA's drafters, like those of all of the Uniform Law Commission's modern entity statutes, paid special attention to the distinction between mandatory and default rules. RULLCA's provision concerning mandatory rules, Section 105(c), specifically lists those dissolution provisions that are mandatory, and that list does not include the one provision on which Part I's technique relies.[87] That is, the statute clearly contemplates a 90-day window without members by default, and it permits the operating agreement to change that window.[88] And again, at the end of that window, the result is only dissolution of the entity, not termination and

civil, criminal, or administrative . . . ."); N.Y. LTD. LIAB. CO. LAW § 703(b) (McKinney 2019) ("[T]he persons winding up the limited liability company's affairs may, in the name of and for and on behalf of the limited liability company, prosecute and defend suits, whether civil, criminal or administrative . . . .").

[82] As a result, the same sort of vetogates I described in Part II may apply, either through the operating agreement or by private contract.

[83] For more information on the distinction between dissolution, winding up, and termination, see SHAWN J. BAYERN, CLOSELY HELD ORGANIZATIONS 140–65 (2014).

[84] Mandatory rules limit what parties may contract about, whereas default rules operate unless parties choose to displace them. *See, e.g.*, Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87, 87 (1989).

[85] Scherer, *Part One*, *supra* note 3.

[86] RULLCA § 110(a)(3).

[87] Indeed, the most recent revision to RULLCA makes more explicit the distinction between mandatory and default provisions for dissolution, explicitly indicating in the comment to § 701 that "[e]xcept for Paragraphs (a)(4) and (5) [concerning judicial and administrative dissolution, respectively] this section compromises [sic] default rules." RULLCA § 701 cmt. (UNIF. LAW COMM'N 2013).

[88] RULLCA § 701(a)(3) (2006) (UNIF. LAW COMM'N, amended 2013).

the consequent destruction of the entity's legal personhood; the entity unambiguously continues to exist through the winding-up period.[89]

B. Absurdity

Notwithstanding what I believe to be a mistaken statute-based critique, underlying Scherer's argument is the potentially legitimate notion that what I have proposed is simply too crazy for courts to accept. I believe this is what he means when he says that courts would invalidate my technique in Part I as "absurd," although as I have discussed, he ties that argument to specific, incorrect views about the business-entity statutes. But what about the underlying notion itself? That is, is Part I's technique too novel or scary for us to tolerate?

To be clear, I do not defend the formalistic interpretation of statutes without regard to their consequences; I would be happy to avoid a literal interpretation of LLC statutes if it led even to bad results, much less absurd ones. But to prohibit the transactional technique I have offered, courts would need a substantive reason to do so, and I think such a reason is much more elusive than Scherer assumes. Moreover, the questions that arise in this area are more contextually and procedurally intricate than is evident on first glance. As a result, on reflection, what may initially seem absurd seems like only a modest extension of parties' capabilities under very broad business-entity statutes—the sort of extension that has happened many times in the history of organizational law to suit changing needs.

1. Timing and Justice

It is easy to declare in the abstract that courts would find what I have proposed to be "absurd," but the question does not arise in the abstract; it is important to consider how the legal question might arise in the first place. For example, it would be easy, but incorrect, to assume that the question of a memberless LLC's legal viability would arise in court immediately after the last member dissociates. That sequence of events is extremely unlikely. Instead, significant economic transactions are likely to take place between that point and the first legal challenge to the entity. Not only will it be

[89] *E.g.*, *id.* § 702(b)(2)(B). Similar misunderstandings seem to lead Scherer to occasionally mischaracterize my argument. For example, he writes: "Bayern attempts to dismiss the significance of [a purported] limitation [in RULLCA] by suggesting that a state could adopt RULLCA without it." Scherer, *Beasts*, *supra* note 3, at 274. But my argument was only that "this provision, perhaps surprisingly, appears not to be a mandatory rule imposed by the uniform statute." Bayern, *Zero-Member LLC*, *supra* note 1, at 268. A "mandatory rule" in the context of a business-entity statute is one that is binding on the parties in entities governed by the statute. The meaning of my sentence is that RULLCA does not make a particular provision mandatory on LLC members or managers, not that the enactment of the section is not "mandatory" on states considering the uniform act's adoption.

difficult by that point to reverse the transactions that have occurred, but it would almost certainly be inequitable to do so in at least many types of cases.

Suppose, fancifully in view of today's technology, that my technique in Part I is followed in order to give legal effect to the operation of a newly built, artificially intelligent robot. No announcement of this course of conduct needs to be made to the world.[90] Suppose then that the robot uses its newfound legal power to cause the LLC to buy a house for $350,000. The LLC owns the house for eight months, by which time the house has appreciated in value to $390,000. Thereafter, the neighbors discover that the owner is an LLC controlled by a robot. Perhaps they or the original owner object to being forced to deal with a non-human entity, so they bring suit to object to the final step of my transactional procedure in Part I.

Most of Scherer's argument depends on a court's strong motivation to invalidate that step and declare the LLC dissolved, based only on the formal proposition that businesses must be backed by humans. But in the context of the suit, there is no functional principle of justice or efficiency that appears to motivate that result. What would the consequence of dissolution be? Would the original owner get the house back and also keep the sum paid to purchase it? Would the state seize the house and sell it at auction? What if the property at stake were not a house but a functioning nonprofit organization providing services to third parties, or a functioning business making money for itself and reinvesting it in the community—functioning only because of the operation of the algorithm behind the LLC? More mundanely, in view of present technology, what if it were a simple online service breaking even financially, providing some mechanical but useful online service, such as brokering cloud storage in exchange for cryptocurrency? In those cases, not just one but millions of transactions may already have occurred.

As these examples all suggest, what is the motivation to undo what has been done? Is it just prejudice against novel legal structures? As I indicated earlier, common law courts do not have that prejudice, particularly when applying business-law statutes.[91] The history of modern business law—and entity law generally—has been a history of expansion into new structures to suit changing times and emerging needs. As I pointed out earlier, an entity with a single human member was regarded as strange and unjustified not too long ago.[92]

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[90] New York's high court recognized a similar notion in overturning the case that Scherer uses to introduce the notion of legal persons in business law; as that court evocatively put it: "Change of status is invisible to the world." MacAffer v. Bos. & M.R.R., 197 N.E. 328, 330 (N.Y. 1935).

[91] *See* Bayern, *Artificial Intelligence*, *supra* note 16 and accompanying text.

[92] *See id.*

Perhaps there is an instinct that these examples are fine but that the underlying structure offers significant potential for abuse—say the robot is not a benign homeowner or a beneficial actor in the public interest but some exemplar of inhuman, dead-hand control. If so, that is a separate matter, and we should then debate the appropriate legal responses to substantive abuse, not the formal status of a memberless LLC. Conventional LLCs have been significantly abused, or at least have significantly reduced transparency in areas such as real estate, as the *New York Times* has documented over the past several years.[93] But nobody thinks to call the LLC statutes themselves absurd for facilitating that activity. Instead, the statutes produce a particular undesirable consequence, but the consequence is undesirable because of the harm it causes, not because of a formal matter of internal governance.

Moreover, what standing would third parties have to bring suit to enforce Scherer's intuitions? For example, if the neighbors of a robot objected to living near a robot-owned house, what claim would they bring? Who has been legally or equitably wronged? What provision of the statute would be used to support dissolution? Scherer does not offer answers to these questions and I do not believe any answers will exist until we see the structures in practice and develop more focused policy concerns and responses to them in the real world.

2. *Alleged Absurdity in Context*

It should be clear from Section III.A that memberless entities *alone* are not absurd; indeed, they are specifically contemplated by various LLC acts. Nor is it crazy to imagine that a legal entity's operation can be controlled to some degree by algorithm; this happens every time employees receive an algorithmically scheduled pay increase not directly implemented by a human. It also happens routinely when people place orders online that are accepted and whose fulfillment is directed by algorithm.

The concern underlying Scherer's reaction to my technique seems to arise only when memberless entities combine with algorithmic control. Scherer does not explain *why* this combination is crazy, except to say that it has not happened before, and to quote generalities like law "orders *human* activities and relations," emphasizing the "human," from *Black's Law Dictionary*.[94] There is a simple formalistic response to this formalistic point: "human relations" include the interactions between humans and the products of human engineering. But, in fairness to Scherer, I believe his response is a

[93] *E.g.*, Louise Story & Stephanie Saul, *Hidden Wealth Flows to Elite New York Condos*, N.Y. TIMES, Feb. 8, 2015, at A1.

[94] Scherer, *Beasts*, *supra* note 3, at 260–61 & nn.1–2 (citing BLACK'S LAW DICTIONARY (10th ed. 2014)).

common first reaction to the possibility of algorithmic legal entities. Perhaps it is a proxy for more focused concerns, some of which I have described in previous work: the enabling of fraud, the potential for dead-hand control, and so on.[95] But as I have just discussed, potential problems—and even potential abuse—are distinct from absurdity.

If the objection is that humans must retain oversight of all legal creations, it may be worth noting that an entity controlled internally by an operating agreement that defers all decisions to an algorithm is still subject to human laws, just as any LLC is. It can still be regulated, sued, or dissolved by the state. The question is simply whether humans specifically need ongoing *internal* oversight of all legal entities—through governance mechanisms under entity-law statutes. Again, Part II showed that humans are already not guaranteed this oversight de facto. But the question is whether the law should recognize that state of affairs more formally. If LLC statutes permit it through their explicit dissolution provisions, what is the extreme absurdity that courts would identify to prohibit the use of those mechanisms? Moreover, if the concern is only that humans will not have enough specific oversight, consider that an "algorithm" to which an operating agreement defers may be implemented by humans; it need not be embodied entirely in software.[96]

If the objection is that organizations should not exist except for human purposes, the structure I have outlined in Part I is fully consistent with a relatively conventional organization that provides an economic benefit to nonmember beneficiaries—people who are functionally and economically shareholders but have no voting power.[97] For example, consider a memberless organization that awards grants to individual humans based on the operation of software, which was designed with the goal of identifying and aiding humans who verifiably engage in certain activity (e.g., produce a formally verifiable mathematical proof). Is it obviously absurd that, in the context of potentially formalized online interactions, organizers would want to set up an entity that takes power away from any of them and gives it entirely to an algorithm? Perhaps, in a particular case, the class of economic beneficiaries is fluid and inconsistent with the traditional notion of membership. For example, maybe it includes everyone who is participating

[95] *See* Bayern, *Artificial Intelligence*, *supra* note 16, at 152–53.

[96] In other words, the technique I outlined in Part I does not require computer software; the notion of an algorithm, particularly for the purposes of Part I's technique, is general enough to include any procedure, including those implemented by humans. *Cf.* John R. Searle, *Minds, Brains, and Programs*, 3 BEHAV. & BRAIN SCI. 417 (1980) (discussing, in the context of the philosophy of mind, formal algorithms implemented by humans).

[97] *Cf.* N.C. GEN. STAT. § 57D-3-01 (2018) (drawing an explicit statutory distinction between a "member" and an "economic interest owner").

in a particular peer-to-peer network during a particular period, or maybe the organizers want to avoid creating unnecessary legal rights in a group of members. Why would a court be motivated to disallow this structure just because the entity has no formal members?

In short, an argument against Part I's technique without understanding the nuanced possibilities that the technique may enable will likely prove too much, or at least it would get in the way of the generativity of organizational law—a generativity that has created significant wealth over the last hundred years.

3. The Context of Technological Change

Putting everything else aside, it is hard to see how something could be "absurd" when it is already contentious in a rich literature. For the last few decades, people have debated the legal personhood of nonhuman entities such as potentially intelligent software, and there is nowhere near a consensus against the idea. Almost thirty years ago, Lawrence Solum addressed the question squarely, and he concluded that "[o]ur theories of personhood cannot provide an a priori chart for the deep waters at the borderlines of status."[98] His practical solution was to wait until "our daily encounters with artificial intelligence . . . raise the question of personhood."[99] Mine was instead to try to develop a productive solution that sidestepped the question of how much intelligence (or some other quality) is needed to achieve the basic incidents of legal personality, precisely because the philosophical questions are so difficult and because the legal system will almost certainly lag behind reality if we wait.[100] There are, of course, other possible solutions. For example, the European Parliament recently proposed to the European Commission that the European Union grant "a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause."[101] The proposal specifically contemplated the case in which "robots make autonomous decisions or otherwise interact with third parties independently."[102]

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[98] Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. REV. 1231, 1287 (1992).

[99] *Id.*

[100] Bayern, *Autonomous*, *supra* note 1, at 110–11.

[101] 2018 Civil Law Rules on Robotics, 2018 O.J. (C 252) 239, 250, *available at* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017IP0051&from=EN [https://perma.cc/GK42-7P6L].

[102] *Id.*; *cf.* David J. Calverley, *Imagining a Non-biological Machine as a Legal Person*, 22 AI & SOC. 523 (2008) (summarizing competing bases, or "theories," that underlie legal personhood).

In this context, it seems far too conservative to presuppose that courts will regard the attempt to achieve a similar result through transactional procedures using existing entity law as "absurd." Even if they were inclined to oppose my interpretation of the business-entity statutes, courts will not make the decision in the abstract. They will be faced with specific facts that require them to consider the potential adaptability of my transactional technique to the various human ends I described in the previous section; any real, specific, downsides in moral or economic terms of permitting the technique (which Scherer does not even mention); the business needs presented by new technology; and the strong trends toward the increased flexibility of entity law in the last several decades.[103] Moreover, particularly when addressing new technological developments, policymakers currently appear to be going out of their way to promote, rather than to stifle, new and creative organizational structures, even when those structures would remove discretion from ongoing human managers.[104]

CONCLUSION

My transactional technique to create algorithmic entities under American LLC laws is supported by specific mechanisms laid out in LLC statutes. It is consistent with the text and structure of the statutes, and also with strong historical trends toward flexibility in entity structure and governance. It is not, as Scherer has suggested,[105] the result of a blind, literalistic reading of the text of a statute. The scheme may seem unusual at first, but so did most of the significant developments in entity law.

That LLC statutes can permit a legal entity to be controlled exclusively by an algorithm, without further internal governance, may be novel. But far from being absurd, memberless entities are easily within the contemplation and structure of the LLC statutes. The exclusive control of such an entity by an algorithm is merely the culmination of decades of increased power for operating agreements and decreased power for the membership of legal entities.

Besides, we probably could not prevent this structure from arising even if we wanted to.

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[103] For more information on these trends, see BAYERN, *supra* note 83, at 243–45.

[104] *See, e.g.*, VT. STAT. ANN. tit. 11, § 4173 (West 2018) (providing for a new type of LLC in Vermont that "may provide for its governance, *in whole or in part*, through blockchain technology") (emphasis added).

[105] *E.g.*, Scherer, *Beasts*, *supra* note 3, at 265–66, 273.