2016

The Implications of Modern Business-Entity Law for the Regulation of Autonomous Systems

Shawn Bayern
Florida State University

The Implications of Modern Business-Entity Law for the Regulation of Autonomous Systems

*Shawn Bayern**

Nonhuman autonomous systems are not legal persons under current law. The history of organizational law, however, demonstrates that agreements can, with increasing degrees of autonomy, direct the actions of legal persons. Agreements are isomorphic with algorithms; that is, a legally enforceable agreement can give legal effect to the arbitrary discernible states of an algorithm or other process. As a result, autonomous systems may end up being able, at least, to emulate many of the private-law rights of legal persons. This essay demonstrates a technique by which this is possible by means of limited liability companies (LLCs), a very flexible modern type of business organization. The techniques that this essay describes are not just futuristic possibilities; as this essay argues, they are already possible under current law.

A quiet revolution is taking place in modern American organizational law. New forms of organizational entities, like limited liability companies (LLCs), resemble familiar business organizations, but they differ radically in largely unrecognized ways. This paper highlights one important implication of certain types of business entities under modern law: their ability to serve as legal "containers" for autonomous systems, such as computer programs or robots. Put simply, LLCs and possibly other modern business forms are flexible enough to permit a phenomenon that most commentators have traditionally considered impossible: effective legal status (or "legal personhood") for nonhuman agents without fundamental legal reform. Because of the unrecognized capabilities of modern entities, anything from a dog to a computer program, or from a 12-year-old child to a robot, can functionally participate in the legal system—buying and selling property, suing and being sued, and so forth.

Part I distinguishes modern organizational entities from the traditional types of business organizations and demonstrates the consequences of the flexibility that modern entities provide. Specifically, it explains several techniques whereby an autonomous system may use modern organizational entities to engage the legal system. Part II presents and contrasts several models for the regulation of autonomous systems, and it considers the role of easily available legal personhood. Part III considers the practical, functional problems and possibilities of the techniques described in Part I.

At the outset, some preliminary discussion will be helpful. For the purposes of this paper, *legal personhood* is simply the capacity of a person, system, or legal entity to be recognized by law sufficiently to perform basic legal functions.[1] As I define the term, it refers to the ability to participate in the fundamental relationships regulated by the private law—such as the capability to own property, enter a contract, file a lawsuit, be named in a lawsuit, serve as a legal principal, and serve as a legal agent. My use of the notion of legal personhood matches its understanding in the private law. Importantly, in this context it is a neutral term with respect to many broader political rights. Recently, at least within American political discussion, a broader concept of legal personhood has become politically and rhetorically contentious;

* Larry & Joyce Beltz Professor, Florida State University College of Law. BS, Computer Science, Yale University; JD, University of California, Berkeley School of Law. For helpful discussions related to the ideas in this article, I thank Rob Atkinson, Thomas Burri, Mel Eisenberg, Mark Gergen, Jay Kesten, Mark Spottswood, and Don Weidner. I also thank Thomas Burri and Isabelle Wildhaber for convening the conference at the University of St. Gallen that inspired this paper. A version of this paper was originally published online in the United States in the *Stanford Technology Law Review*; it appears here with permission of that journal.

1 A somewhat more formal definition that conveys a similar message is that a legal person, in the sense I mean it in this paper, is anything to which the law can ascribe any Hohfeldian jural relation, such as a right, duty, or power. *See* Wesley N. Hohfeld, "Fundamental Legal Conceptions as Applied in Judicial Reasoning", 26 *Yale L.J.* (1917) pp. 710 *et sqq.* (defining and classifying "jural relations").

for example, the term arises in debates over whether corporate entities have constitutional rights to freedom of speech or to participation in the electoral process.[2] This paper avoids that particular political debate; private-law personhood is not logically tied to constitutional protections—any more than it is tied, for example, to the right of two natural persons to marry[3]—and this paper takes no position concerning the scope of American or other countries' constitutional rights.

As a matter of positive law, of course, legal or juristic "personality" is reserved for natural persons and specific types of legal entities, such as corporations, in modern legal systems. Other physical systems—such as (1) nonhuman forms of life, including other animals; (2) natural systems; and (3) algorithmic processes implemented in software or hardware, including those that underlie modern computer systems—are not traditionally conceived as legal persons. Accordingly, even if such systems, to varying degrees, could be said to make decisions autonomously, their acts are normally understood to have a different legal nature from the acts of natural persons. For example, at least in the United States, a computer program cannot presently serve as a legal agent simply because it formally lacks legal personhood,[4] even if it would be commercially, politically, or socially useful for the computer program to have that capability.

A surprising implication of modern American business-entity law has the potential to reform this limitation in the legal treatment of autonomous systems. The rise of a new organizational form known as the limited liability company (LLC)—which has emphasized the freedom of those involved in the organization to determine its internal structure and, accordingly, has permitted forms of governance much more flexible than those in traditional partnerships or corporations—provides one possible conceptual framework for adapting the private law to technological innovations. Specifically, modern LLC statutes in the United States appear to permit the development of "memberless" legal entities—that is, legal persons whose actions are determined solely by agreement or algorithm, not in any ongoing fashion by human members or owners. Such autonomous legal entities are a strong candidate for a legal "technology" or technique to respond to innovations in autonomous systems. Such memberless entities can encapsulate a physically autonomous system and provide a mechanism for that system to take legally autonomous action. Organizational law, as it often does, thus provides a connection or interface between a system (on one hand) and the various bodies of rules in private law, such as contract, tort, and property (on the other).[5]

In short, just as a business corporation may be said to be an "autonomous system" of sorts (one that involves humans but which can act legally without ongoing intervention by individual people, as when an "automatic" corporate process causes a change in an employee's salary or status without specific human intent or knowledge), memberless legal entities may be a suitable legal response to physical systems that are physically autonomous. On this view, the precise degree of autonomy of a system does not directly dictate the law's response to it; instead, a machine's legal autonomy—or indeed the legal autonomy of any algorithm, process, or system—can derive simply from the power people have under existing law to create artificial legal entities for more traditional purposes.

Though a legal regime like the one I describe admittedly raises some difficult problems, there are reasons to think it is more adaptive than its alternatives. In particular, a regime that relies solely on public bodies (like legislatures) to grant legal-entity status may react too slowly to technological change, and it may raise questions about precise degrees of autonomy that the law is currently ill-equipped to answer. A regime that refuses to recognize autonomous sys-

2 See Elizabeth Pollman, "Reconceiving Corporate Personhood", 2011 *Utah L. Rev.* pp. 1629 *et sqq.*, at pp. 1629–32 (discussing a similar distinction in the meaning of corporate personhood and applying it to modern debates about constitutional rights). For a recent discussion of different functions of corporate personhood generally, see Margaret M. Blair, "Corporate Personhood and the Corporate Persona", 2013 *U. Ill. L. Rev.* pp. 785 *et sqq.*; see also Eric W. Orts, *Business Persons: A Legal Theory of the Firm* (Oxford: Oxford University Press, 2013).

3 Of course, nobody thinks two corporations can get married, even though they are undisputedly legal persons in the realm of private law and organizational law. (Conversely, nobody thinks two natural persons can merge.)

4 *See Restatement (Third) of Agency Law* § 1.04 cmt. e (2006)(" [A] computer program is not capable of acting as a principal or an agent as defined by the common law. At present, computer programs are instrumentalities of the persons who use them. If a program malfunctions even in ways unanticipated by its designer or user, the legal consequences for the person who uses it are no different than the consequences stemming from the malfunction of any other type of instrumentality.").

5 Shawn J. Bayern, *Closely Held Organizations* (Durham, North Carolina: Carolina Academic Press, 2014) at pp. 93–94 (describing ways in which organizational law serves as an interface to other areas of private law).

tems at all may, similarly, limit the social potential of such systems. And there is reason to think that even the arbitrary, rapid proliferation of legal entities causes little harm, either for legal processes or for the goals that law intends to serve; for example, in several legal jurisdictions within the United States, a concept known as the "series LLC" has begun to permit individuals to create multitudes of separate LLCs without even requiring registration of the new individual entities with the government.[6] In short, given that the legal system already has legally recognized entities like corporations and harmonized that recognition with other areas of law, recognizing and harmonizing such entities as robots may prove to be an easier challenge than commentators typically assume.

One final note before proceeding: in referring to autonomous systems in this paper, I mean to do so broadly. The paper's conclusions are applicable to many different types of systems. On one end of the spectrum, an "autonomous system" might be a fairly mundane, conventional program that performs a defined role, such as a network of computer processes that operates vending machines that accept Bitcoin (or some other online payment that requires no specific interface with the legal recognition or titling of bank accounts).[7] On the other, it might—in the future—be an intelligent robot that passes the Turing Test.[8] I take no predictive position here on the advent of various types of software-based intelligence; as the analysis in Parts I and II will make clear, little of my legal discussion depends on specific attributes or capabilities of autonomous systems themselves. Indeed, one significant thesis of this paper is that legal recognition of autonomous systems can proceed independently from a taxonomy of, or even merely attention to, degrees of autonomy or understandings of computer intelligence. Just as a corporation needn't be intelligent for the legal system to recognize it, so a software system needn't be intelligent to achieve legal personhood or its functional equivalent.

I. The Novelty of Modern Entities in Enabling Nonhuman Autonomous Systems

To understand the subtly revolutionary capacities of modern organizational forms, it will be useful to consider why it was impossible for traditional organizational entities, like the classic corporation, to encapsulate and give legal life to an autonomous system.

Historically, the prototypical business *entity* is a corporation; the common law has long permitted businesses to be organized in non-corporate forms, but it was only relatively recently that it conceived those forms as legal entities or legal persons. Originally, as is well understood, governments chartered corporations for particular, narrow purposes; the standard example is the construction of a bridge.[9] Unlike their modern descendants, these narrowly tailored corporations could not enter a new line of business or even adapt to many changing business circumstances; the doctrine of *ultra vires* ("beyond its powers") could invalidate corporate actions that transgressed a corporation's original charter.[10] For example, a bridge-building corporation could not open a general retail store at the foot of the bridge.

Clearly, the narrowly focused historical form of the corporation does little to aid an autonomous system that seeks legal personhood. Getting a modern government to issue a personalized charter is likely to prove as difficult as getting a modern government to recognize an individual autonomous system outright as a legal person. But corporations, at least as they have been conceived traditionally, impose other limitations that are just as significant for our purposes as the limitations in a charter, and these limitations remained significant even as the power of corporations to conduct general business expanded.

6 See Del. Ltd. Liab. Co. Act. § 18–215.

7 For more discussion of this type of autonomous entity, see Shawn Bayern, "Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC", 108 *Nw. U.L. Rev.* (2014) pp. 1485 *et sqq.*, at p. 1486 ("Bitcoin allows autonomously operating software—such as a computer virus or the software that manages a network of vending machines—to exercise control over significant wealth, not as an intermediary for individuals or companies, but rather, in a functionally meaningful sense, in its own right.").

8 See A.M. Turing, "Computing Machinery and Intelligence", 59 *Mind* (1950) pp. 433 *et sqq.* (proposing that a functional answer to the question "Can machines think?" be determined through an "imitation game" in which a computer seeks to impersonate a human in written correspondence).

9 The prominence of the bridge-building example in American commentary may date to the case Charles River Bridge v. Warren Bridge, 36 U.S. 420, at p. 420 (1837) (involving "a corporation created by an act of the legislature of the state of Massachusetts, passed on the 9th of March, 1785, entitled 'An act for incorporating certain persons for the purpose of building a bridge over Charles river, between Boston and Charlestown, and supporting the same during forty years.'").

10 *See* Bayern, *Closely Held Organizations*, *supra*, note 5, at pp. 209–10.

For example, one specific restriction in the historical corporate form is that the corporation be managed (or at least overseen)[11] by a board of directors and that this board be populated by *natural* persons. Thus, for example, the Delaware General Corporation Law provides simply: "The board of directors of a corporation shall consist of 1 or more members, each of whom shall be a natural person."[12] This restriction is standard across American law.[13] The requirement that directors be natural persons historically ruled out a corporation or a partnership from serving as a director, probably in the interest of clarity in decision making and of corporate structure. Clearly, of course, this requirement makes it impossible to create an autonomous corporation—that is, one that does not require an ongoing association with any natural persons.

Starting around the mid-1900s, corporate law became more flexible in terms of the permissible underlying structures of corporations.[14] To address the needs of closely held corporations—"ranging from family businesses to joint ventures owned by large public corporations"[15]—courts began to permit unanimous shareholders to restrict a corporation's board of directors severely, substituting a flexible, statutorily unspecified governance by private agreement.[16] Eventually, state statutes came to give more explicit power to unanimous shareholders, and the Model Business Corporation Act eventually went so far as to uphold unanimous shareholder agreements "even [if they are] inconsistent with . . . this Act in that [they] . . . eliminate[] the board of directors."[17]

The modern Model Business Corporation Act, then, comes very close to enabling an autonomous system to inhabit a corporation and use the corporation as its interface to the legal system. To see why this is so, it is first necessary to recognize a proposition that I will call the *process-agreement equivalence principle*. This principle recognizes that, at least as a matter of conceptual logic, a legally enforceable agreement may give legal significance to arbitrary features of the state of any process (such as an algorithm or physical system) by specifying legal conditions satisfied by features of that state. As an example, a simple bilateral contract may make an obligation conditional on the output of a computer program, the behavior of a dog, and so on. The principle that a process and an agreement can correspond to one another takes this example a step further: it recognizes that a sufficiently broad agreement can allow essentially unlimited legal influence for an arbitrary process. Consider, for example, an artificially intelligent algorithm that passes the Turing Test in apparently acting roughly as a human acts.[18] An agreement can, by specifying obligations and conditions, effectively delegate legal rights and decision-making powers to such an algorithm even though that algorithm is not a legal person. An agreement might say, for example, "Your obligation to perform is discharged if the algorithm indicates *X*," where *X* could be (for an unsophisticated algorithm) a formal output on a computer terminal or (for an artificially intelligent algorithm) something that approaches a description of human understanding and action (like "that it is satisfied with the arrangement and physically signs a release form").

To be clear, I am not claiming that contract law must enforce any contract with any condition. The claim is simply a conceptual one—that an agreement may give legal significance to the action of any process or system, without regard to the legal personhood of that process or system, by specifying appropriate terms, promises, and conditions.

To apply the process-agreement equivalence principle to the foregoing discussion of corporate structure, suppose that a natural person *E* (for *enabler*) forms corporation *C*, signing an "agreement"[19] that specifies that *C* is to have no board of directors and instead shall take all legal actions determined by *A* (an autonomous system). In this scenario, *A* can seem to use the corporation for its own legal purposes, whatever they may be. This explains how a modern

11 See Melvin Aron Eisenberg, "Legal Models of Management Structure in the Modern Corporation: Officers, Directors, and Accountants", 63 *Calif. L. Rev.* (1975) pp. 375 *et sqq.*, at p. 376 ("Instead [of a managerial board], in small, closely-held corporations the business is typically managed directly by owner-managers, while in large, publicly-held corporations . . . the business is typically managed by the top executives.").

12 Del. Gen. Corp. L. § 141(b).

13 E.g., Model Bus. Corp. Act. § 8.03(a) ("A board of directors must consist of one or more individuals . . . ."); ibid. § 1.40(13) ("'Individual' means a natural person.").

14 See ibid. § 7.32 cmt.

15 Ibid.

16 See ibid.

17 Ibid. § 7.32(a).

18 See *supra*, note 8.

19 The term "shareholder agreement" as used in the MBCA appears to cover single-party operating agreements; at least, nothing in the Act equates "agreement" with "contract" or requires the assent of two or more parties. Even if such a requirement existed, however, it would not change much of the discussion in the text.

closely held corporation can permit an autonomous system to *approach* something like legal personhood. Still, *C* is not truly an autonomous legal entity, for *E* remains a shareholder and can continue to exert control over the entity.[20] And there is little that any of the parties involved (*E*, *A*, or *C*) can apparently do to retire the corporation's shares entirely. *E* can of course transfer the shares—some or all of them—to a new shareholder, but corporate law still appears to impose a requirement that there be at least one shareholder.[21] And shareholders must be legal persons.[22] The result is apparently that even in a modern corporation with a shareholder agreement that eliminates the board of directors, ultimate authority in the corporation must rest with an existing legal person. Accordingly, while for practical purposes a modern corporation could serve as a convenient way to permit an autonomous system to act as roughly a legal person for a while, any arrangement would depend on the ongoing consent of an existing private party.

Of course, traditional common law permitted forms of business other than corporations. Historically, the main alternative in the common law to the corporation was the general partnership. As originally conceived, and as embodied in the widely adopted Uniform Partnership Act (UPA) of 1914, general partnerships were not legal entities and did not interact significantly with the concept of legal personhood. In other words, partnerships did not have rights or duties themselves; a classical statement of the matter was that "a partnership was no more a legal entity than was a friendship."[23] A partnership could not sue or be sued; instead, the individual partners would have to file a suit or be named as defendants. The statute made complicated arrangements so that bank accounts could be titled in partnerships' names; surprisingly to common lawyers outside the US, the UPA effectively created a novel tenurial framework—"tenancy in partnership"—to address this need.[24] Still, the partnership itself was not a legal person.

Primarily because the application of legal personhood to partnerships simplifies the rest of partnership law, the modern Uniform Partnership Act of 1997—known commonly as the Revised Uniform Partnership Act, or RUPA—adopts a position that was argued in 1914 but did not take hold: namely, that general partnerships should be conceived as legal entities—that is, as legal persons. It is worthwhile to consider, then, the possibility that modern general partnerships might provide legal capabilities for autonomous systems. The proposed technique would be as follows: (1) *X* and *Y* (two natural persons or other preexisting legal entities) form a general partnership under RUPA, entering into an operating agreement under which the partnership adopts the decisions of *A* (an autonomous system); (2) *X* dissociates from the partnership; (3) *Y* dissociates from the partnership. The first step is mostly unremarkable; clearly two legal persons can establish a partnership,[25] and RUPA provides an expansive scope for partnership agreements.[26] Notably, this scope appears to be sufficient under RUPA to permit the partnership to continue to exist following the second and third steps, for RUPA permits partnership agreements to modify the conditions on which a partnership dissolves and winds up except for particular, enumerated cases.[27] Nonetheless, there remains significant dispute about whether RUPA would even permit step (2)—that is, whether a general partnership under RUPA can persist with only one partner, let alone no partners.[28] While I think it is possible for general partnerships under RUPA to encapsulate autonomous systems, I need not press the point here because modern LLCs provide even greater flexibili-

20 Though the Model Business Corporation Act is not fully clear on this point, if *E* is the sole founding shareholder and remains the sole shareholder, *E* can likely revoke the operating agreement. See MBCA § 7.31(b) ("An agreement authorized by this section shall be . . . subject to amendment only by all persons who are shareholders at the time of the amendment, unless the agreement provides otherwise . . . .").

21 Ibid. § 6.01(b) ("The articles of incorporation must authorize . . . one or more classes or series of shares that together have unlimited voting rights . . . .". Note that § 7.32(a) of the Act does not include eliminating the notion of shareholders from its list of the capabilities of an enforceable shareholder agreement.

22 E.g., ibid. § 1.40(21) ("'Shareholder' means the *person* in whose name shares are registered . . . ." (emphasis added)).

23 Melvin Aron Eisenberg & James D. Cox, *Business Organizations: Cases and Materials*, 11th ed. (St. Paul, MN: Foundation Press, 2014), at p. 132. Cf. *supra*, note 1 regarding Hohfeldian jural relations.

24 Unif. P'Ship Act. § 25(2)(a) (1914) (creating and defining "tenancy in partnership").

25 RUPA § 202(a) ("[T]he association of two or more persons to carry on as co-owners a business for profit forms a partnership").

26 RUPA § 103(a) (providing that "relations among the partners and between the partners and the partnership are governed by the partnership agreement" except for a statutorily enumerated list of specific prohibitions).

27 See RUPA § 103(b)(8).

28 See Robert W. Hillman & Donald J. Weidner, *"Partners Without Partners: The Legal Status of Single Person Partnerships"*, 17 *Fordham J. Corp. & Fin. L.* (2012), pp. 449 *et sqq.* (presenting both sides of the debate).

ty and are, conceptually and practically, a simpler route.[29]

Consider, then, the following use of an LLC: (1) an individual member creates a member-managed LLC,[30] filing the appropriate paperwork with the state; (2) the individual (along, possibly, with the LLC, which is controlled by the sole member)[31] enters into an operating agreement governing the conduct of the LLC; (3) the operating agreement specifies that the LLC will take actions as determined by an autonomous system, specifying terms or conditions as appropriate to achieve the autonomous system's legal goals; (4) the individual transfers ownership of any relevant physical apparatus of the autonomous system to the LLC;[32] (5) the sole member withdraws from the LLC, leaving the LLC without any members.[33] The result is potentially a perpetual LLC—a new legal person—that requires no ongoing intervention from any preexisting legal person in order to maintain its status.

To understand the resulting organization's perpetual nature, it is important to recognize that under many modern LLC acts, the sole member's dissociation from the LLC does not require that the LLC terminate its existence. Indeed, many acts specifically contemplate at least the temporary continuation of a memberless LLC because this is a convenient option in several practical cases, such as estate planning. For example, parents might set up an LLC to hold a family's assets and adopt an agreement that states that on the death of the last surviving parent, the couple's children have the option to join the LLC.[34] The modern Uniform Limited Liability Company Act—known as RULLCA—accommodates this possibility, specifically providing that an LLC may by default continue to exist for ninety days without any members.[35]

Thus, at the very least, RULLCA clearly permits the creation of a new entity governed only by agreement—and thus by algorithm or process[36]—for up to ninety days. This is not insignificant; it would, for example, be sufficient to enable an algorithm to enter "its own" short-term service contracts with third parties during the ninety-day period that the Uniform statute permits by default. But I believe RULLCA's permission extends further. As I have previously argued, the apparent ninety-day limitation,

perhaps surprisingly, appears not to be a mandatory rule imposed by the uniform statute. RULLCA Section 110(c) lists the statute's mandatory, nonwaivable provisions. That list explicitly refers to other criteria that might cause dissolution of an LLC—specifically, to applications by members for court-ordered dissolution as a result of fraud, oppression, or general illegality—but does not refer to the ninety-day window for zero-member LLCs. Perhaps this is an oversight, but following the present version of RULLCA, which several states have adopted, it appears remarkably straightforward to set up a perpetual LLC that has no members in its final, planned operational state.[37]

Moreover, the official comment to RULLCA's provision on LLC dissolution expressly identifies two other causes of dissolution, noting that they are "nonwaivable."[38] It does not say the same thing about the "90 consecutive days during which the company has no members" provision.[39]

Admittedly, the dissolution provisions of RULLCA could be interpreted differently; it is possible to read the language at the start of the dissolution provision ("A limited liability company is dissolved, and its activities must be wound up . . .")[40] as a mandatory rule rather than default rule. This interpretation is not persuasive, however, because much of RULL-

29 LLCs provide other advantages over general partnerships, such as limited liability, and if nothing else they require only one (rather than two) legal persons to establish them. The same analysis as in the text applies to limited liability partnerships (LLPs) governed by RUPA. Broadly similar analysis applies to limited partnerships governed by various versions of the Uniform Limited Partnership Act, but for ease of exposition I leave limited partnerships outside the scope of this article.

30 LLCs have two common organizational paths, "member-managed" and "manager-managed." See, e.g., Unif. Ltd. Liab. Co. Act § 407 (2006) [hereinafter "RULLCA"]; Bayern, *Closely Held Organizations*, *supra*, note 5, at pp. 243–45. The technique I describe in the text can achieve similar results with both types of LLCs; I focus on member-managed LLCs for simplicity.

31 RULLCA § 407(b) ("In a member-managed limited liability company, . . . [t]he management and conduct of the company are vested in the members.").

32 Similarly, the individual may transfer any relevant intellectual property concerning the autonomous system to the LLC.

33 I have previously described an application of this technique in Bayern, "Of Bitcoins", *supra*, note 7, at pp. 1495–98.

34 The parents may desire this structure (compared to one in which the children are members) as a convenient way to avoid having any legal obligations within the company to their children during their lifetime.

35 RULLCA § 701(a)(3) ("A limited liability company is dissolved, and its activities must be wound up, upon . . . the passage of 90 consecutive days during which the company has no members.").

36 See *supra* text accompanying notes 17–18.

37 Bayern, "Of Bitcoins", *supra*, note 7, at p. 1497.

38 RULLCA § 701 cmt.

39 Ibid.

40 RULLCA § 701.

CA's language appears mandatory but uncontroversially may be overridden by an operating agreement. For instance, in RULLCA's provision that governs the distribution of assets upon the winding up of an LLC, the statute uses similarly mandatory language: "After a limited liability company [pays its debts], any surplus must be distributed in the following order . . . ."[41] It is, however, commonplace and uncontroversial that an LLC operating agreement may specify a different plan of distribution from the one that the statute outlines.

Regardless, RULLCA is not unique in recognizing memberless entities, and some states' statutes come very close to making explicit the possibility of perpetual memberless entities. For example, New York's LLC statute provides that an LLC "shall" terminate if

> "at any time there are no members, provided that, unless otherwise provided in the operating agreement, the limited liability company is not dissolved and is not required to be wound up if, within one hundred eighty days *or such other period as is provided for in the operating agreement after the occurrence of the event that terminated the continued membership of the last remaining member*, the legal representative of the last remaining member agrees in writing to continue the limited liability company and to the admission of the legal representative of such member or its assignee to the limited liability company as a member, effective as of the occurrence of the event that terminated the continued membership of the last remaining member..."[42]

While the statute does contemplate that a memberless LLC will eventually have a new member, it explicitly gives the drafter of the operating agreement discretion as to the period during which the entity needn't have members. The statute permits, for example, the operating agreement to provide for a million-year period during which the LLC needn't have members. Again, during that period, the entity is governed only by agreement, not by the votes of members. It would be uncontroversial for the agreement to dictate, for example, a simple algorithm by which small payments were made.[43] Under the process-agreement equivalence principle, however, the agreement can effectively delegate all decision-making powers to an autonomous entity.[44]

The end result is novel legal personhood—or at least a functional analogue of it—without any ongoing commitment by, or subservience to, a preexisting person. The range of legal action for this novel legal person is simply anything a contract or operating agreement can specify as a term or condition.

Of course, if legislatures do not like this possibility, they can easily amend the LLC acts to prevent it.

---

41 RULLCA § 708(b). RULLCA uses similar language to apply to pre-dissolution distributions, which an operating agreement can just as easily and uncontroversially override: "Any distributions made by a limited liability company before its dissolution and winding up must be in equal shares among members and dissociated members." Ibid. § 404(a).

42 N.Y. LLC. LAW § 701(a)(1)(4) (emphasis added).

43 On a larger scale, the LLC may have employees who continue operating the LLC without any members. The employees' powers would be determined ultimately by the operating agreement. It would not be unusual, for example, for a financially significant LLC in New York with a few employees to continue operating the entity normally while the operating agreement's process for determining new members proceeded separately, unaffected by (and not directly affecting) any operational concerns. If this situation arose in the context of a "family LLC" used by a wealthy family for the purposes of estate planning, I suspect the basic operation of the LLC, during its memberless period, would be uncontroversial except for substantive ambiguities in the operating agreement.

44 Moreover, as I have previously argued, "The permission of just a single state would be sufficient to enable autonomous businesses. An organizer of such a business merely would need to select the organizational law of a state that permits a perpetual autonomous LLC." Bayern, "Of Bitcoins", *supra*, note 7, at 1497. To act in other states, the business would ordinarily need to register as a foreign LLC, but (1) this step is often neglected with minimal results apart from limiting the ability of the entity to file a lawsuit in state court until the LLC corrects the technical registration defect, and (2) in any event, registration of a foreign LLC does not ordinarily alter its internal affairs, such as membership status or rights. This is a result of the general internal-affairs doctrine, a conflict-of-law rule that causes courts to defer on organizational matters to an entity's state of organizations. See the case Edgar v. Mite Corp., 457 U.S. 624, at p. 645 (1982) ("The internal affairs doctrine is a conflict of laws principle which recognizes that only one State should have the authority to regulate a corporation's internal affairs.").A further side note: Even under an LLC act that does not permit memberless entities, the theoretical—and certainly the practical—possibility of *entity cross-ownership* enables very similar possibilities. The proposed technique is as follows: (1) Existing person *P* establishes member-managed LLCs *A* and *B*, with identical operating agreements both providing that the entity is controlled by an autonomous system that is not a preexisting legal person; (2) *P* causes *A* to be admitted as a member of *B* and *B* to be admitted as a member of *A*; (3) *P* withdraws from both entities. The result does not trigger the law's response to memberless entities, because what remains are simply two entities with one member each. Corporate statutes often have formal provisions that prevent this sort of cross-ownership from functioning successfully in corporations—at least as concerns the voting rights of shares—but there do not appear to be similar restrictions on LLCs, which of course in general provide for greater flexibility in arrangements of control and organization. Cf. MBCA § 7.21(b) ("Absent special circumstances, the shares of a corporation are not entitled to vote if they are owned, directly or indirectly, by a second corporation . . . and the first corporation owns, directly or indirectly, a majority of the shares entitled to vote for directors of the second corporation.").

But this technique suggests a very useful potential regulatory model for legal personhood. Under this model, legal personhood is like fire: it can be granted by anyone who already has it. It is a peer-to-peer process, rather than a top-down bestowal from the government or the legal system directly based on any generally recognized characteristics of autonomous systems. It avoids potentially intractable puzzles about precisely when, or upon attaining which characteristics, a system or process should have legal personhood—or at least it devolves those questions to anyone who already has that status.

II. The Incidents and Patterns of Private-Law Personhood

Part I described several techniques whereby an autonomous system might, with the help of an existing legal person, establish a functional analogue of novel personhood in its own right. The result is not literal legal personhood, but the opportunity to control an entity that is a legal person without potential interference from those preexisting entities that established the legal person. It is worth noting that the techniques I have described do not provide new capabilities for an autonomous system in the abstract; they simply enable existing legal entities to confer a functional version of entity status (that is, the opportunity to control a new entity) on arbitrary systems, processes, or algorithms.

This Part locates the technique of Part I in a framework for analyzing the bestowal of legal personhood. To put it differently, it considers the role of legal personhood in a modern system of private law.

1. Frameworks for Granting Legal Personhood

There are at least three ways in which legal personhood can be regulated. First, it might be restricted to predefined groups of potential parties, like all humans or a subset of humans. I call this the *denialist* model, and in its pure form, it is too extreme for essentially all modern, mature legal systems, which bestow legal personhood on organizations as a convenient interface between organizational law and the rest of the private law. Second, it might be granted only by public bodies—legislatures or administrative agencies—upon reasoned determinations of the capabilities or other attributes of a candidate person, such as a robot, a nonhuman animal, or a software system. I call this the *regulatory* model of legal personhood.

Most conventional analyses of legal personhood appear to assume that the law must choose between one or another of these models—that is, that the law must either adopt a policy of denying the expansion of legal personhood or must evaluate the capabilities of a new candidate system before making specific decisions about the legal personhood to which it should be entitled.[45] But there is a third model based on the organizational techniques I described in Part I: legal personhood, in its minimal private-law sense, can be treated as a status that can be granted by anyone who already possesses it. I call this the *grantable* model.

It is worth noting that the current law already provides a hybrid, grantable notion of legal personhood: legal personhood may of course be granted by legislation, but the legislation associated with organizational law (RUPA, corporate law, and LLC acts) permits it to be granted by private parties. The organizational-law model provides a potentially powerful conceptual insight: everything works fine when legal entities proliferate.

It is worth noting that there are other potential models of legal personhood that may also be useful to consider briefly. For example, suppose that a state

45 See, e.g., Susan W. Brenner, "Humans And Humans+: Technological Enhancement and Criminal Responsibility", 19 *B.U. J. Sci. & Tech. L.* (2013) pp. 215 *et sqq.*, at p. 285 ("I suspect [the law's concern with "how to enforce basic fairness and morality between a mix of human beings with varying abilities and also, perhaps, intelligent robots, cyborgs, chimeras, animals and alien beings"] will have to change even more if and when law decides to admit 'objects' (e.g., robots), animals (enhanced or not), semi-humans (cyborgs and chimeras) or space aliens to the 'legal person' club currently monopolized by Standard human beings."); Jack M. Beard, "Autonomous Weapons and Human Responsibilities", 45 *Geo. J. Int'l L.* (2014) pp. 617 *et sqq.*, at p. 663 (at least given current levels of technology, "[h]olding a robot accountable as a 'legal' person for war crimes as if it were a human appears to be impractical on many levels."); Bert-Jaap Koops, Mireille Hildebrandt, and David-Olivier Jaquet-Chiffelle , "Bridging the Accountability Gap: Rights for New Entities in the Information Society?", 11 *Minn. J.L. Sci. & Tech.* (2010) pp. 497 *et sqq.*, at p. 511 ("Depending on how novel legal persons are introduced, they could, in fact, destabilize familiar notions of responsibility that form the moral core of the law, reinforcing undesirable affordances of an increasingly independent technological infrastructure."); Lawrence B. Solum, "Legal Personhood For Artificial Intelligences", 70 *N.C.L. Rev.* (1992) pp. 1231 *et sqq.*, at p. 1243 ("How then should the law answer the question whether an AI can become a legal person and serve as a trustee? The first inquiry, I should think, would be whether the AI is competent to administer the trust.").

court were to disagree with my interpretation of RULLCA and hold that it is a mandatory rule under RULLCA that an LLC be wound up after ninety days without members. In this case, it may still be difficult to determine who might bring an action to declare that the entity is dissolved. If only a public official (for example, the manager of the state department that regulates business entities) has that capability, then legal personhood becomes something that anyone can grant but only a particular deputized public official can remove. Similarly, if any private party that interacts with a memberless LLC can sue to have it dissolved, legal personhood becomes something that anyone can grant but that requires the passive acknowledgement of certain other private parties.

2. Formal Versus Substantive Legal Personhood

I leave most functional considerations to Part III, but in terms simply of conceptual analysis, there are several reasons to think that permitting the technique described in Part I—that is, a grantable model of legal personhood, or something close to it—is not particularly radical. Legal personhood is simply, as it turns out, not that important. Allowing it to proliferate is not a significant conceptual change to the law. This is true for several reasons.

First, regardless of the application of personhood to autonomous entities, private parties can already create legal entities for arbitrary purposes. They can even do so without formally registering them with the state, because it seems the state has little reason to keep track of legal entities. The most common mechanism by which parties can create an unregistered entity involves the "accidental" creation of general partnerships, a process that is well-understood (though contentious in the details) under historical partnership law and under RUPA.[46] A newer, less well-explored mechanism for creating a range of entities without separate state registration is to take advantage of state acts, such as Delaware's, that provide for Series LLCs.[47]

Second, legal personhood—again, in the minimal private-law sense in which I use the term[48]—simply does not confer radical capabilities. Any autonomous system that desires (if it is sufficiently advanced to experience desire)—or for which others desire—legal personhood can approximate its capabilities with any willing human collaborator (or indeed any existing legal person that is willing). For example, an intelligent robot that wishes to own real property (or, more mundanely, a conventional computer program whose developer wishes it to trade on her financial account) can achieve ends very similar to those that legal personhood provides without legal personhood, so long as it has a single enabler among the seven billion humans on the planet.

For example, suppose I develop a robot and open a bank account for the robot in my name, and suppose that using that account, the robot is able to earn some money from third parties. As a legal person, I simply can use the "robot's" funds to purchase a house for the robot's use, functioning as its practical, substantive, and economic (though not legal) agent. As with a trust, no new legal person needs to be created in order to permit one person to act to achieve impersonal goals.[49] Consequently, legal personhood begins to look mostly like a bookkeeping mechanism—or like a way of simplifying the law's terminology and accounting—rather than like a sub-

46 *See* RUPA § 202(a) ("[T]he association of two or more persons to carry on as co-owners a business for profit forms a partnership, whether or not the persons intend to form a partnership."); see also Bayern, "Three Problems (and Two Solutions) in the Law of Partnership Formation", 49 *U. Mich. J. L. Ref.* (forthcoming 2016) (discussing the "accidental" formation of partnerships).

47 See Del. Ltd. Liab. Co. Act § 18-215(a) ("A limited liability company agreement may establish or provide for the establishment of 1 or more designated series of members, managers, limited liability company interests or assets. Any such series may have separate rights, powers or duties with respect to specified property or obligations of the limited liability company … and any such series may have a separate business purpose or investment objective.").Indeed, the essence of series LLCs may well be the ability to create a multitude of legal entities without direct, ongoing interaction with the government. Under general partnership law, even though conceptually the same partners might create a multitude of accidental "series partnerships," courts do not seem to have recognized that possibility. Nothing in RUPA prevents this possibility, but because general partnerships do not confer limited liability, there seems to be little reason for partners to argue that they have created a multitude of distinct, transaction-specific general partnerships.

48 See *supra*, text accompanying notes 2–5.

49 Trusts have long been permitted to aid impersonal beneficiaries, as in a "pet trust" that provides for the care of an animal. See Kim Bressant-Kibwe, "Pet Trust Primer", November 2015, available on the internet at <https://www.aspca.org/pet-care/planning-for-your-pets-future/pet-trust-primer> (last accessed on 3 December 2015). This type of trust has existed for hundreds of years. For example, Alexander Pope wrote of wealthy people who, finding little personal use for their money, "Die, and endow a College or a Cat." Alexander Pope, "Epistle III to Allen Lord Bathurst: Of the Use of Riches", in John Butt (ed.) *The Poems of Alexander Pope*, pp. 570 *et sqq.*, at p. 574 (New Haven: Yale University Press, 1963; original publication in 1733).

stantive grant of rights. Surely a sophisticated robot (or, again, the sophisticated developer of a conventional program or machine that acts in some sense autonomously) could create a conventional entity, like a corporation, in which it would be very difficult for any party to interfere unilaterally with the entity creator's original plan for the entity, which plan could include arbitrary purposes such as the functional empowerment of an autonomous system. Granting the capabilities of legal personhood to such a system does not create new substantive or economic powers; it just clarifies what is happening.[50]

Third, even without the techniques described in Part I, enforcement of the technicalities internal to organizational entities is rare and difficult, at least where violations of those technicalities harm nobody's substantive interests. The registration of organizations is notoriously messy and inaccurate; state corporation and LLC records are often not updated, for example, when membership changes, or perhaps even when an organization terminates. In practice, if an LLC files a statement of authority naming a particular human agent—something I suspect would be commonplace for an LLC controlled by at least some types of autonomous systems—most banks, trading partners, and so on will be able to rely on the agent's authority without worrying about the LLC's peculiar structure, just as they already may do when dealing with conventional LLCs. Even if a memberless LLC were an illegal structure for an LLC to adopt, who would ever object in most cases?

Indeed, if it were unconcerned about observing all legal niceties, a sufficiently capable autonomous system, years in the future, could probably get away with simply visiting a state's website and organizing an LLC, using the name and address of a willing human agent who would need no ongoing practical involvement with the entity. Or, indeed, our rogue intelligence may use an entirely made-up name and address, because states do not routinely authenticate information when filing requests for organizational registration. At least for mundane transactions, the operation of such an entity would probably not trigger any practical public scrutiny, and no private parties would have reason (or perhaps standing) to object. The result is simply a kind of impersonation of a legitimate legal person—a sort of legal analogue to a successful performance on the Turing Test. As the old *New Yorker* cartoon put it, "On the internet, nobody knows you're a dog."[51]

III. Practical Autonomy and Legal Function

So far, I have concentrated on showing how the existing law can enable autonomous systems and why it is not necessarily radical or conceptually problematic for it to do so. In this Part, I consider a more important question: Are such possibilities substantively desirable? On functional grounds, should legislatures and judges view the techniques of Part I favorably, or should they stifle them?

Of course, the conceptual discussion of Part II hints at my normative leanings: there appear to be many organizational advantages, and few systematic downsides, in permitting memberless entities that a nonhuman system might "inhabit" and use as an interface to the rest of the private law. But questions of substantive value are worth asking directly: Do we have reasons to suppose that permitting autonomous legal entities for autonomous physical systems will make the world a better or a worse place?

To begin, I believe we can take some superficially appealing but ultimately unpersuasive objections to the technique off the table. For one thing, permitting an autonomous entity greater access to the legal system, with the full force of organizational law behind it, may suggest a sort of "unnatural" cession of power. Even in the abstract, it may seem unsettling to give legal capabilities to autonomous systems; more concretely, it may seem foolhardy or even dangerous to permit autonomous systems to employ individuals, as of course an LLC can do. Do we want to be responsible for a world in which human masses labor for the benefit of a capitalistic autonomous system?

Partly, I think these fears reflect a version of the naturalistic fallacy.[52] I also believe they misidentify

---

50 Similarly, for example, modern LLC law is probably flexible enough to create an entity with several members, none of which has any power—because the organizational document gives them none or requires complex checks and balances that are practically impossible to meet. Such an entity could functionally enable autonomous systems as well. It is important to recognize that nothing in the mandatory structure of LLCs requires that members be the economic beneficiaries of the entity, that members have any significant power, and so on; the structure of an LLC is flexible enough not to require any such traditional patterns.More generally, this line of thinking demonstrates that a robot can achieve significant interaction with the legal system merely with the consent of (or even merely with the absence of objections by) a passive, existing legal person.

51 Peter Steiner, [Cartoon], New Yorker, 5 July 1993, at p. 61.

52 George Edward Moore, *Principia Ethica*, rev. ed. (Cambridge: Cambridge University Press, 1993) at pp. 63–65 (discussing the "naturalistic fallacy").

the danger. If the concern, for example, is really for the loss of human dignity inherent in a system where masses of human people serve impersonal ends that are not clearly socially desirable—a concern that I share—that problem should be addressed directly, not by making it more difficult for all autonomous systems to acquire property or to interface in other ways with the legal system. There are several reasons to think autonomous legal entities are not especially dangerous. First, as I have already discussed, the legal techniques I am describing provide little new functional capabilities; autonomous systems already can do quite a lot, legally, with a single willing collaborator that is already a legal person.[53] Second, business entities are already artificial; one who is concerned—as I am—with the possibility of human masses serving a faceless, Kafkaesque corporate system with complex algorithmic rules, distant control, and unclear social benefits should recognize that conventional business entities pose the same danger. Is it really worse to work for a large, procedurally constraining, amoral organization merely on the formal basis that it has no shareholders?

Closely related, a historical conceptualism in organizational law requires that for-profit businesses have an identifiable residual owner. Of course, nothing in logic requires this,[54] but the modern conceptual distinction between for-profit and not-for-profit organizations has been the existence, in for-profit businesses, of at least one residual, beneficial owner—a preexisting legal entity that can receive a distribution of profits.[55] But this is not an objection against autonomous entities; it may simply either stretch the existing conceptual definition of not-for-profit entities or suggest that we should split that category between conventional nonprofits and autonomous systems.[56]

It may seem dangerous, too, to encourage ownerless entities if doing so stymies the possibility of "veil-piercing," or the doctrine that an owner may be liable for the obligations of a limited-liability entity in exceptional circumstances.[57] This, too, is an unpersuasive reason not to permit autonomous entities. First, though veil piercing occasionally becomes a hot topic among academics, in real cases it is rare.[58] Second, veil-piercing is an equitable doctrine,[59] and courts can fashion remedies appropriate to the abuse they discern in particular cases. For example, if the same autonomous system runs a group of formally unrelated entities, a court could still treat them as a single entity for the purposes of imposing liability. A court might similarly issue orders involving financial accounts connected in fact, though not in legal title, to a memberless LLC. Third, as a demonstration of my second point, courts have "pierced the veil" of nonprofit entities.[60]

By contrast, there are several advantages to permitting at least experimentation with autonomous entities. The alternatives are either too slow (direct regulation by statute) or too restrictive (no recognition at all). Permitting the formal type of autonomous entity that I have described will avoid requiring the law to specify, in advance, a standard of autonomy that is sufficient for legal rights. Even the best philosophers have struggled with the definition of humanity and its implication for human rights, leading to polarizing results.[61] There is clearly currently no social consensus on the question,[62] and such a consensus is particularly unlikely to emerge *before* intelligent autonomous systems become more important.

53 See *supra*, Part II.2.

54 See, e.g., Meir Dan-Cohen, *Rights, Persons, and Organizations* (Berkeley: University of California Press, 1986) at p. 46; see also Katsuhito Wai, "Persons, Things and Corporations: The Corporate Personality Controversy and Comparative Corporate Governance", 47 *Am. J. Comp. L.* (1999) pp. 583 *et sqq.* (discussing the history of related ideas); Bayern, "Of Bitcoins", *supra*, note 7 (citing sources).

55 Henry B. Hansmann, "The Role of the Nonprofit Enterprise", 89 *Yale L.J.* (1980) pp. 835 *et sqq.*, at p. 838 ("A nonprofit organization is, in essence, an organization that is barred from distributing its net earnings, if any, to individuals who exercise control over it, such as members, officers, directors, or trustees.").

56 Cf. Bayern, "Of Bitcoins",*supra*, note 7, at p. 1495.

57 For a recent discussion of veil piercing, see Jonathan Macey and Joshua Mitts, "Finding Order in the Morass: The Three Real Justifications for Piercing The Corporate Veil", 100 *Cornell L. Rev.* (2014) pp. 99 *et sqq.* .

58 See Douglas G. Smith, "A Federalism-Based Rationale for Limited Liability", 60 *Ala. L. Rev.* (2009) pp. 649 *et sqq.*, at n. 12 (collecting recent sources).

59 See Forrest Hodge O'Neal and Robert Thompson, *O'Neal's Close Corporations*, 3rd ed.(1997), § 1.10, at pp. 48.

60 See Rev. Unif. Unincorporated Nonprofit Assoc. Act § 8 (2008) cmt. ("Courts have pierced the corporate veil of nonprofit corporations. . . . The fact that members of nonprofit corporations for the most part do not have an expectation of financial gain, as compared to shareholders of a for profit corporation, should mean that there will be fewer types of cases than those involving for profit corporations where the veil piercing doctrine will be held to be applicable to nonprofit corporations.").

61 E.g., Peter Singer, *Practical Ethics* 2d ed. (Cambridge: Cambridge University Press, 1993) at pp. 182–90 (arguing for a limited conception of rights for severely disabled humans).

62 Cf. Solum, "Legal Personhood", *supra*, note 45.

There are, however, several legitimate concerns with the grantable model of legal personhood I have proposed. One is the possibility for what property-law commentators call "dead-hand control," or the restriction of property by a legally unshakeable ancient agreement.[63] I agree that the drift between an old agreement and newer substantive concerns raises important problems. Conventional LLCs generally raise similar problems, of course; for example, it is not uncommon for owners of a conventional small business to become deadlocked or to give others power to veto changes to an aging operating agreement.[64] For a conventional business, the LLC statutes ordinarily provide several ways to release the property of tied-up organizations; chief among these are judicial dissolution[65] and administrative dissolution.[66] For example, under LLC statutes, members can often bring actions seeking a court to declare an LLC dissolved because (1) the LLC's members are deadlocked, (2) it is impracticable for the LLC to continue operating in view of the goals of its operating agreement, (3) the LLC is being managed in a way that oppresses the member or otherwise harms the member's interests, (4) the LLC is breaking the law. Administrative dissolution—typically by the agency responsible for registering and formally regulating business entities—is mainly available on technical grounds, such as the failure to "pay, within 60 days after the due date, any fee, tax, or penalty."[67] Either of these provisions could be expanded—and they should be expanded if memberless LLCs ever become significant. For example, a group other than members (such as creditors or employees) could be given the right to seek judicial dissolution on particular grounds, such as wasteful dead-hand control. An administrative agency could easily be given similar powers. Just because legal personhood can be formally granted does not mean that public authorities need to tolerate it if it does not serve social ends. To be clear, though enabling memberless LLCs does in some sense give power to autonomous capital not backed by human interests, my argument does not proceed from any extreme notion of unbounded capitalism. Everything I describe is, and should be, subject to future regulation.

IV. Conclusion

Though robots and other autonomous systems cannot participate in today's legal system as legal persons, this paper has shown a legal technique by which they might achieve something similar: the possibility of inhabiting a business entity (that is, a legal person) of a type that is so flexible that the system's intent, to whatever extent such an intent can be said to exist, can drive the entity's legal decisions. This possibility is not as radical as it sounds, for it is available today so long as the autonomous system has at least one willing collaborator from the set of preexisting legal persons. The flexibility of modern LLCs appears to make such collaboration technically unnecessary, leading to a surprising possibility: effective legal personhood for nonhuman systems without wide-ranging legal reform and without resolving, as a precondition, any philosophical questions concerning the mind, personhood, or capabilities of nonhuman systems.

To be sure, "effective" legal personhood is not the same thing as real legal personhood. Under my proposal, autonomous systems have neither legal "equality" with humans nor any direct, *de jure* legal personhood. They can simply operate or maneuver a legal person to achieve arbitrary legal ends. This *de facto* private-law personhood is different from full legal recognition in several ways. For one thing, the private law is not the totality of the law, and the techniques I have described say nothing about, for example, the criminal regulation of autonomous systems. For another, the mapping of an autonomous system to a memberless entity needn't be one-to-one; the same robot may operate multiple entities, for example. The point is simply that just as business entities provide a legal *alter ego* for natural persons, they can conceptually provide a legal *alter ego* for things that are not natural persons. Just as conventional corporations can operate by process, algorithm, or agreement without direct human oversight in all cases, so might a new type of entity operate in such a manner indefinitely. Though a nonhuman autonomous system is merely the "instrumentality" of a legal person

63 See Rob Atkinson, "The Low Road to Cy Pres Reform: Principled Practice to Remove Dead Hand Control of Charitable Assets", 58 *Case W. Res.* (2007) pp. 97 *et sqq.* (discussing the problem of dead-hand control, primarily in the context of not-for-profit organizations).

64 See Bayern, *Closely Held Organizations, supra*, note 5, at pp. 273–83 (discussing deadlock in LLCs and the possibility of judicial dissolution).

65 See RULLCA § 701(4)–(5).

66 See RULLCA § 705.

67 RULLA § 705(a)(1).

under existing law,[68] modern LLC law gives the autonomous system the opportunity to identify so closely with a novel type of legal person that it effectively becomes its own instrumentality.

Moreover, these possibilities are not just theoretical. The techniques I have described appear to work under existing law.

68 See *supra*, note 4.