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Empowering Distributed Autonomous Companies

Houman B. Shadab

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Empowering Distributed Autonomous Companies

It is difficult to overstate the growing importance of software to companies, whether it be in the form of automated trading, web-based applications and data storage, or monitoring systems to comply with regulation. But software may soon also be changing the very nature of business enterprises by giving rise to digital companies that operate autonomously.

Digital firms taking the form of distributed autonomous companies (DACs) would likely be built using the type of blockchain technology underlying Bitcoin. The benefit of using a distributed blockchain ledger is that a DAC's identity and activities can be publicly verified and carried out without a central authority or point of failure. The scope for abuse or incompetence could also be reduced because its operational rules would be secure and require consensus to be altered.

A DAC could own assets but would not need employees. Like modern day investment trusts, a DAC could enter into contracts with managers and others as needed to generate profits. A DAC's automated decision making could also be programmed to operate by distributed consensus, meaning that some of its activities would require the verification or feedback of a network before being undertaken. For example, a DAC that manufactures goods may contract with a supplier but only after the blockchain network verified that the supplier meets certain production quality standards. With advances in artificial intelligence, a DAC might be able to operate mostly autonomously, but would probably still require human involvement at the edges.

But innovation does not do well amidst legal uncertainty. So in order for DACs to become operational and reach their full potential, the law must give them a stamp of approval. I argue that a framework similar to the law of limited liability companies would be the best fit.

The Need for Organizational Law

Organizational law is a set of background rules that governs companies' internal structure. In the United States, it is found in state statutes governing corporations and other types of companies. Organizational law serves several important functions, including:

- providing external recognition that a company is an independent legal entity owned by shareholders (personhood);
- making enforceable a company's ability to own assets, enter into contracts, and generate profits and losses;
- keeping shareholder assets away from company creditors (limited liability) and keeping company assets away from shareholder creditors (entity shielding);
- prioritizing the claims of creditors against the company;
- clarifying ambiguities about the rights of owners.

For these reasons, corporate statutes have long been described as enabling companies to form and operate according to the design of their founders. Delaware's corporate code is the preeminent source of organizational law for public corporations, largely because its case law is sophisticated and widely understood.

For DACs, organizational law would provide foundational rules to govern companies. To "incorporate," a DAC could transmit a message to a blockchain recording its existence. Each DAC, in turn, would have a more specific set of rules embedded in its own code. These rules would govern its operations and the rights of its owners, and thereby serve the role traditionally served company operating agreements, certificates of incorporation, and bylaws. Organizational law is particularly suited for software code-based entities like DACs that would need to rely on a foundational set of parameters and specifications to permit its more specific operations to take place. The code-based system of organizational bylaws developed by Eris is an example of an operational framework for digital organizations.

As with traditional companies, a state legislature must enact a statute recognizing DACs to make certain that the company's existence will be recognized and its rights will be enforceable in court. State legislatures recognizing new types of business

entities is not uncommon. For example, as of February 2015, 27 states had enacted legislation recognizing benefit corporations, which are a new type of socially-minded for-profit company.

Instead of states adopting DAC statutes, or until they do, it may be sufficient to enact legislation simply recognizing that DACs are a legitimate form of business entitled to rights similar to other companies. For example, the following provisions from a Digital Company Enabling Act could serve as a first step in enabling a DAC to be recognized as a legal person under Delaware law:

SECTION 1. TITLE.

This Act may be cited as the Digital Company Enabling Act.

SECTION 2. PERSONHOOD, RIGHTS, AND POWERS.

A digital company has legal personhood and rights and powers to the full extent provided to limited liability companies under the Delaware Limited Liability Company Act.

SECTION 3. FORMATION.

In order to form a digital company, one or more persons must create, record, or transmit unique and publicly verifiable data that indicates formation of the company.

SECTION 4. DEFINITIONS.

...

“Digital company” means any company that operates primarily on the basis of software code.

While plenty of questions should remain even after the passage of this type of statute, a little bit of law could go a long way.

DACs Should be Structured as Limited Liability Companies, Not Corporations

Like other business entities, the characteristics of a DAC can borrow from the two fundamentally different types of companies: partnerships and corporations. In their purest sense, partnerships are decentralized companies whose owners manage the business and are personally liable for the firm's debts. Partnerships are indistinguishable from their owners, and if a partner goes so does the partnership. At the other extreme are corporations. In a corporation, owners and managers are distinct, and management must be centralized in a board of directors subject to election by shareholders. Corporate shareholders are fundamentally passive and enjoy limited liability.

Although a DAC could take a variety of forms, the law of limited liability companies (LLCs) is best suited for DACs due to its simplicity and flexibility.

LLC statutes first emerged in the late 1970s to allow companies to enjoy the benefits of both partnerships and corporations. LLCs are not taxed on their profits, maintain limited liability for owners, and can adopt decentralized management without a board. But it wasn't until more recently that LLCs began to take off. By 2007, LLCs were being formed at a faster rate than corporations and being used in a wide range of industries. Large companies have also adopted the LLC form, including Sony Computer Entertainment America, maker of the PlayStation home entertainment console.

A company is often understood to be a "nexus of contracts," and this description fits the LLC better than any other type of business organization. For example, the Delaware LLC Act "give[s] the maximum effect to the principle of freedom of contract and to the enforceability" of LLC agreements. This means that LLC law can accommodate a wide variety of specific business structures and use cases.

Corporate law, by contrast, is more rigid. In a corporation, mergers and changes to the articles of incorporation must be approved by directors and shareholders. In an LLC, these activities can be undertaken by one person or however is specified in the operating agreement.

Corporations also require at least one class of stockholders to have voting rights. Although a corporation can be structured like Google and Facebook with dual class shares that give founders disproportionate voting power, LLCs are not even required to have voting shares.

LLC law also allows managers to eliminate any extra-contractual fiduciary duties owed to shareholders. This allows LLC managers to be free from the nebulous body of law defining when fiduciary duties are violated. But under corporate law, fiduciary duties are sacred and cannot be eliminated.

Profit-Seeking Software: Series LLCs

A simple LLC structure may not be enough to enable DACs to be fully realized, however.

Blockchain organizational law should go further and also enable DACs to operate similar to what are known as *series* LLCs, which were first recognized under Delaware law in 1996.

The defining characteristic of a series LLC is that it permits a company to form internal companies each having a distinct purpose, owners, managers, and assets. The assets of each internal company can be transferred among each other while still preserving an internal liability shield that protects each company from the creditors of the others.

The general benefit of series LLCs is that they can create distinct businesses without being required to establish a new company from scratch. This likely reduces operational costs and taxes. More importantly, however, is that it enables a company to adopt a wide variety of governance structures and profit-sharing arrangements. For example:

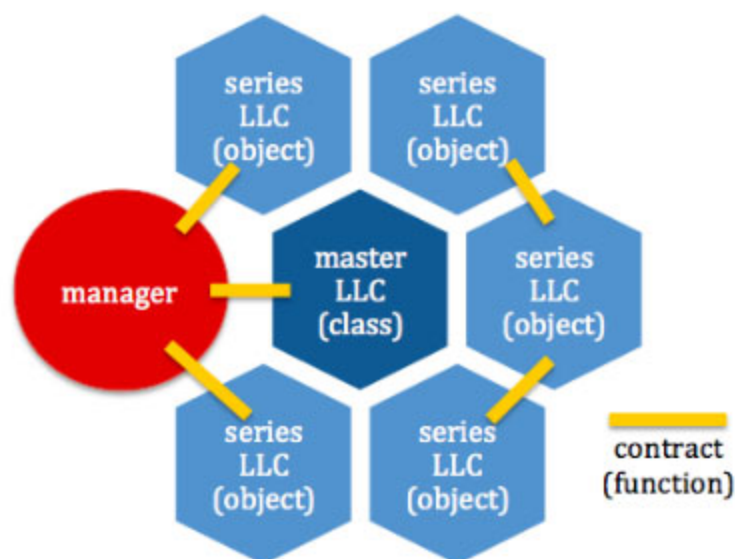
- series can be created to seek profits from particular activities and expand, dissolve, or multiply as profits are generated;
- assets can be transferred among series based on their profitability or other criteria;
- the ability of stakeholders to control, interact with, or share in the profits of different series can change depending on the success of particular series.

Individuals or entities (including other DACs) may interact with a DAC by buying in, contributing work, or being granted shares, as noted by William Mougayar.

The series LLC structure is particularly suited for a digital company created from software. Software code is typically written in a way that relies heavily on establishing hierarchies, defining entities by type, making decisions based on algorithms, and having the results of computations feed back into the system. These fundamental aspects of software architecture fit well into the series LLC legal structure. Series LLCs permit the ongoing creation and rearrangement of assets and distinct companies under the umbrella of a master company.

The following figure is a high-level illustration of the structural similarity between a series LLCs and building blocks of the widely-used approach to software languages known as objected oriented programming.

Distributed Autonomous Company: Series LLC with Object Oriented Structure



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Under an object oriented approach, the master umbrella LLC can serve the place of the top-level class while each series is a company containing an operational software bundle (an object). Contracts between the master company, among series, or with a manager or other service provider are easily understood in terms of software functions. Numerous other aspects of object oriented programs, from “inheritance” that allows objects to be derived from one another to “encapsulation” that segregates data among objects, also fit easily into the structure and operations of a series LLC.

A series LLC is also conducive to autonomous decision making involving the creation of new companies (a new series) because doing so does not require a new master LLC to be formed. The automatic creation of new companies for certain tasks, or to hold specific assets or data, would likely be a key benefit of DACs.

Entrepreneurs and developers are creating the infrastructure required to make DACs a transformative force. But to make that happen, the law needs to empower them.

Posted by [Houman Shadab](#) on February 21, 2015 at 09:49 AM in [Bitcoin](#), [blockchain](#), [digital currencies](#), [distributed autonomous companies](#) | [Permalink](#)

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Comments

That's the first time I've seen a legal construct applied to the DAO concept, and thanks for doing that.

Couple of points.

Why aren't there employees?

Maybe we need a new classification akin to a stakeholder- a cross between a user & a shareholder that produces & consumes value from the DAO?

Is there a need to also flush out a DAO accounting construct, which reflects the different nature of assets & value appreciation?

Posted by: twitter.com/wmougayar | [February 27, 2015 at 04:20 PM](#)

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