Abandoned at the Nexus of Contracts

Author : Anna Gelpern

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Usha R. Rodrigues, Law and the Blockchain, 104 **Iowa L. Rev.** 679 (2019).

Usha Rodrigues's article on the firm as a nexus of "smart" contracts made me think of Mary Shelley's Frankenstein. Maybe it is her use of "contracts made flesh," the images of digital organisms mimicking their "corporeal" prototypes (creepy, if confusing), or the all-encompassing, oozing smartness of code. Victor Frankenstein was smart. He endowed his creature with formidable capacity to learn: within days, it had processed Goethe, Plutarch, and Milton. Then Victor freaked out and lost control.

Shelley's story reads by turns as Don't-Mess-with-Creation and Don't-Abandon-Your-Children. I saw abandonment everywhere in *Law and the Blockchain*.

The article's contribution is in carefully synthesizing contract, business organizations, and securities law as they apply to smart contracts—self-executing, self-enforcing promises encoded in digital protocols—designed to insulate private bargains from public intervention. A protocol built entirely on the blockchain[1] would make performance automatic if pre-specified conditions are met. Borrowing an influential early image, if the vending machine gets enough change, I get a candy bar. If it rains in Spain on Tuesday, you get $20. If an investment project is certified and half the stakeholders vote to proceed as prescribed in the code, the investment goes forward. Precise thresholds and verification mechanics are central to the technology, but unimportant to the argument; let us assume that it all works as written.

Smart contracts can reduce ambiguity and opportunistic behavior in some cases, but like all contracts, they remain incomplete. Neither the parties nor the code writers can foresee all possible contingencies that might arise over the life of the contract, as smart contract aficionados recognize and as anyone who has ever kicked a vending machine can attest. Adjudication and default rules in statutory and common law would normally fill gaps in incomplete contracts. In Rodrigues's terms, gap-filling requires legal intervention. Unless the need for intervention is encoded ex ante, a smart contract is impermeable. If an unforeseen contingency happens, the contract implodes, and takes trust in the underlying protocol down with it. One such implosion happened in 2016 and appears to have motivated much of Law and the Blockchain.

The 2016 incident involved a blockchain-based firm, or "decentralized autonomous organization" (DAO). The DAO embodies a strand of thinking in economic and corporate law scholarship that depicts the firm as "a nexus for a set of contracting relations among individual factors of production," or a voluntary bargain hub. More exciting still, it shows how private ordering—contract plus code—could fill a big gap in the contractarian nexus that has, until now, required recourse to public ordering.

The gap arises by operation of law. Two or more flesh-and-blood people who co-own a business are, by default, a general partnership. They are personally on the hook for the firm's liabilities, and leave the firm's assets vulnerable to claims by their personal creditors. At the extreme, a partner's personal creditors could seize her interest in the business, and even force its dissolution. To partition personal and firm assets, our business owners would normally have to opt into one of several legal forms, such as a corporation, that shield business assets and limit owner liability. A publicly-supplied asset partition comes at a cost, which might include administrative and governance constraints, background duties, and potential for judicial intervention. If the owners tried to achieve the same outcome by contract, they would run into coordination and moral hazard problems. For instance, each owner that contracts to shield firm assets from his personal creditors would pay more to borrow, while a free-rider who exposes the firm to his personal credit risk would pay less.

A firm that lives entirely on the blockchain can insulate its assets and protect its owners without recourse to public ordering, for as long as its flesh-and-blood owners remain hidden behind pseudonyms and its code does not contemplate distribution to, or dissolution at the behest of, outside creditors. This "nexus of smart contracts" would obviate the public-private bargain at the heart of the business form, and potentially foreclose public intervention altogether.

The firm is abandoned at birth and released into the wild, untethered from the "corporeal" business ecosystem with its legal backstops. If there is a glitch in the code that lets one stakeholder abscond with $50 million, the others have no recourse. If the code-writers decide to fleece elderly ladies under the guise of producing a Broadway show, the ladies are out of luck.

For now, the virtual economy is probably too small and fragmented to make truly autonomous, untethered firms commonplace. As long as virtual firms and their stakeholders must occasionally surface in the corporeal world, there is room for legal intervention. Moreover, as Rodrigues points out, securities regulation could create opportunities for legal intervention early in the life of a firm. If investors were to delegate firm governance to the code, regulators might recognize the investment as a security, triggering registration, disclosure, and liability rules. A single entry point for the law that is not the code should suffice to renegotiate the public-private bargain.

Frankenstein's creature was a fascinating bundle of contradictions: beautiful and hideous, complex and primitive, yearning for humanity and bent on its destruction. Next to it, smart contracts look positively stupid. They do not brood over Man and God, but barrel along as coded, ignoring the unforeseen, immune to public interest, unmoored from social context—that is their principal virtue. Like vending machines, such stupid contracts can

be very useful for their capacity to bind discrete transactional commitments. Their ability to effect asset partitioning is a different matter. The specter of runaway firms impervious to legal intervention could be a very big governance deal. Kudos to Usha Rodrigues for spotting it and launching the conversation.

1. A decentralized, pseudonymous, encrypted transfer and verification system; bitcoin is an example.

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