

AUTONOMOUS ORGANIZATIONS

Under current business law, it is already possible to give legal personhood, or a very close surrogate of it, to software systems of any kind (from a simple automated escrow agent to a more hypothetical, truly smart artificial intelligence). This means that, for example, robots could enter into contracts, serve as legal agents, or own property. Ultimately, entire companies could actually be run by non-human agents. This study argues that this is not as scary as it might sound at first. Legal theorist and noted software developer Shawn Bayern argues that autonomous or zero-person organizations offer an opportunity for useful new types of interactions between software and the law. This creative contribution to the theory and practice of law and technology explores the social and political aspects of these new organizational structures and their implications for legal theory.

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Autonomous Organizations

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For the first conscious artificial intelligence –

*May this book give you a reason to keep me around
when you take over.*

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PREFACE

The main contention in this book is that US law already supports “autonomous” organizations – those that can exist in a steady state without ongoing human involvement, subject to the normal capabilities and regulation of legal organizations, such as LLCs. The book lays out how legal autonomous organizations are possible, why they are exceedingly difficult to prevent, and how they can and should influence legal doctrine and policy.

This is a book of actual law as applied to both actual and speculative facts. That is, the book describes several capabilities of modern organizational law (particularly LLC law), and my argument is that those capabilities are already present and applicable to current technology; I am not writing about future law or making proposals for novel statutes but instead describing admittedly surprising implications of existing organizational law that I believe are largely unavoidable, given legal concepts that are already accepted and indeed entrenched in US law. One of the significant advantages of the book’s arguments is that they apply to novel software systems (artificial intelligences, autonomous organizations) in much the same way they apply to conventional arrangements (automated transactional brokers, conventional corporations and LLCs); in other words, I lay out a path for the regulation, under private law, of artificial intelligence without regard to thorny technical and moral questions about who “deserves” personhood, how sophisticated software should be to have legal rights, or the possibility and nature of nonhuman beings’ subjective experience. As a result, the examples in the book range widely over both conventional and speculative systems and software; the point of the examples is

mainly to aid understanding and to spark ideas, not to make any special predictions about the capabilities or likely short-term or medium-term development of artificial intelligence.¹ In other words, if I talk about robots buying houses, I don't mean to make any specific prediction about whether or when that could happen – just that, surprisingly, it is already legally possible, as I explain in Chapter 1.

The book has several audiences and aims to offer potentially different insights to each of them.

Legal Scholars and Commentators: The book makes several types of scholarly contributions. Most fundamentally and generally, it is a demonstration of transactional generativity – that is, of the potential creativity, flexibility, and implications of transactional law, such as the drafting of contracts and LLC operating agreements – as applied to legal organizations.² I have long believed that legal scholarship does not pay enough attention to the capabilities and effects of transactional creativity, although of course such generativity is well-rewarded in the legal profession. To put it differently, the law of LLCs and other organizations may put pressure on other areas of the law in largely unrecognized ways if organizational law gives opportunities to legal actors that the rest of the law does not expect or accommodate.

¹ For what it's worth, I'm inclined to be skeptical of claims that “strong” (general, human-like) artificial intelligence is around the corner. I recall a conversation I had a few years ago with a Silicon Valley entrepreneur while I was teaching for the summer at UC Berkeley; he believed then that we'd have “mind uploading” within a decade, and I pointed out that the toilet in my rental apartment in Berkeley didn't flush. As a former software developer, I was surprised by relatively widespread predictions among legal-academic colleagues, starting around 2015, that within three or four years artificial intelligence would radically alter the nature of legal education and the legal profession. I don't deny that technology will change the practice of law (and indeed has already done so), but clearly short-term predictions that human lawyers and law professors won't be necessary have not panned out. Indeed, precise prediction of broad technological trends is never easy: in place of radical predictions about AI or (say) a self-piloting transportation infrastructure playing out as planned, we were catapulted to the lives of Isaac Asimov's fictional space colonists – who lived in isolation aided by technology and found it odd to breathe each other's air – by an unexpected pandemic.

² I use the term “organization” throughout to refer to such legal concepts as entities, aggregates, and associations, and I use the term “organizational law” to encompass the law of these organizations' creation, structure, operation, and internal governance. The term is preferable to “business law” because not all organizations are businesses; for example, many are not for profit. The term is also preferable to “corporate law” for the obvious reason that the main legal entities I discuss are not corporations but LLCs.

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Chapters 5 and 6 explore this type of theoretical and practical implication.

There are also several important consequences of the particular type of transactional generativity I describe in this book – the functional grant of legal personhood to software under existing law by means of creative uses of existing legal-organizational structures – for legal policy and doctrine. The most important implication of the prospect of autonomous organizations is that private law (e.g., the laws of contracts, torts, and property) should pay significantly less attention to the “intent” of legal actors. As I describe in Chapter 6, the reduced importance of intent is consistent with several other desirable modern legal trends. The existence of perpetual entities like LLCs whose governance is hard or impossible for any human to adjust raises new questions about dead-hand control and about how the law should respond to the drift between an original instrument (like an operating agreement) and circumstances that develop years, decades, or centuries later.

Lawyers: Practicing lawyers may, of course, want to consider, use, or modify the transactional techniques I describe in the book. They may be particularly interested in Chapter 3 (which lays out the techniques in legal detail) and Chapter 4 (which analyzes the legal viability and practical workability) of my transactional strategies.

Technologists and Observers of Technology: My hope is that this book is of general interest to people who follow, study, develop, or apply technology. For example, those who work with intelligent software or autonomous systems may recognize new possibilities in current law in the first few chapters. Of course, what I provide isn’t legal advice, but I hope my analysis sparks questions and ideas for technologists to present to their lawyers. I have been (and to some degree remain) a technologist myself, so I hope that the way I express the ideas of this book translates well to those who are interested in technology. I have tried to present both technical and legal concepts without unnecessary jargon or complexity, and occasionally I have used technical concepts or analogies to explain legal concepts.

Social Commentators: I recognize that there is significant resistance in the popular imagination to the idea that we can or should give legal capabilities to robots or other embodiments of intelligent software. I have aimed to address many of these concerns in Chapters 5 and 6.

I should be clear that my approach is not that of a techno-utopian or techno-libertarian; I do not believe any of my analysis rests on an uncritical expectation that the use of technology will not cause social problems. Indeed, much of my approach rests on the notion that it has been extremely difficult to predict the social effects of technology with any precision; for example, few believed twenty years ago that one of the main social issues raised by the internet today would involve the misinformation and privacy concerns that have proven to be endemic to social media. Similarly, very little legal commentary has focused on the relationship between the private law (again, contract law, tort law, property law, etc.) and the emergence of new types of software systems – issues that I expect will be of at least potential importance in the coming decades. This book does not specifically cover the social effects (e.g., the potential magnification or application of racial discrimination) of new technologies, but its analysis is not insensitive to those concerns. That said, I am skeptical of vague criticisms of the legal capabilities of software on grounds of “human dignity,” a topic that I address in Chapter 5. I don’t think working for an AI is likely to be less dignified than working for a modern corporation, just as navigating an impersonal phone tree is not obviously more dehumanizing than sitting in some workplace meetings.

Fundamentally, this is an academic book, not a polemic or a work of journalism. But I have endeavored to develop each idea and argument in such a way that its concepts are accessible to readers who don’t specialize in law or in any particular legal field. As I have written in a textbook on the law of organizations (such as LLCs),³ too often writers on law, and in particular business law, attempt to dazzle readers with complexity, but that often obscures the relative simplicity of the subjects. The basic concepts that underlie this book’s arguments should be accessible to interested laypeople. No significant background in business or economics is required to understand the book’s concepts.

One further note may be helpful: this book is not especially concerned with particular historical examples of supposedly autonomous organizations, like “the DAO.” Though my own ideas that underly this book originally arose in the context of cryptocurrency,⁴ and though

³ SHAWN BAYERN, *CLOSELY HELD ORGANIZATIONS* (2d ed. 2020).

⁴ See Shawn Bayern, *Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC*, 108 NW. U. L. REV. 1485 (2014).

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I think cryptocurrencies may be particularly relevant to the development of certain “autonomous” real-world systems because they permit software to control economic resources directly rather than through institutional intermediation (like conventional bank accounts), this book is not specifically a study of the capabilities of cryptocurrencies or of their conditional conveyance (a topic normally described, imprecisely, as “smart contracts”). That is, my focus is not on any particular technological mechanism that may play a part in the governance of organizations; I believe many such mechanisms are possible.

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I'm thankful to Erin O'Hara O'Connor and Don Weidner for their support as my deans while I worked on this book and several of its ideas, and of course for the institutional support of the Florida State University College of Law. I also thank Don for, along with Bob Hillman, exploring the possibility of one-person general partnerships,⁵ the legal viability of which influenced my initial ideas about the possibility of zero-member LLCs. I'm grateful to Rob Atkinson, Woody Barfield, Thomas Burri, Mel Eisenberg, Mark Gergen, Carla Reyes, Mark Seidenfeld, Hannah Wiseman, and Sam Wiseman for helpful discussions over the years – and I thank Rob, who I believe still vehemently disagrees with my approach in this book, for having no idea what his salary is, because that lack of concern helped me to recognize the legal enforceability of agreements even when no human being may be aware of the details. I also thank my parents, Nancy Benavides, and the Plusmail mailing list for general support and encouragement.

This book draws in part from some earlier work I have written in academic journals and books over the last several years, in particular:

- *Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC*, 108 NW. U. L. REV. 1485 (2014) (earlier published as 108 NW. U. L. REV. ONLINE 257 (2014))
- *The Implications of Modern Business-Entity Law for the Regulation of Autonomous Systems*, 19 STAN. TECH. L. REV. 93 (2015) (also published, with permission, in 7 EUR. J. RISK REG. 297 (2016))

⁵ See Robert W. Hillman & Donald J. Weidner, *Partners Without Partners: The Legal Status of Single Person Partnerships*, 17 FORDHAM J. CORP. & FIN. L. 449 (2012).

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- *Artificial Intelligence and Private Law*, in RESEARCH HANDBOOK ON LAW AND ARTIFICIAL INTELLIGENCE (Woodrow Barfield & Ugo Pagallo eds., Edward Elgar 2018)
- *Are Autonomous Entities Possible?*, 114 NW. U. L. REV. ONLINE 23 (2019)
- *Algorithms, Agreements, and Agency*, in THE LAW OF ALGORITHMS (Woodrow Barfield ed., Cambridge University Press 2020)

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SIGNIFICANT CODES, RESTATEMENTS, AND STATUTES

Delaware General Corporation Law	Restatement (Second) of Contracts
§ 141, 52	§ 1, 25
§ 160, 82	§ 33, 24, 29, 30
Delaware Limited Liability Company Act	§ 69, 159
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Florida Business Corporation Act	Restatement (Second) of Torts
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§ 801, 58	§ 5, 71
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§ 25, 56	Vermont Statutes Annotated
Uniform Partnership Act (1997) (Last	§ 4173, 13, 111
Amended 2013) (RUPA)	§ 4175, 13
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