CryptoKitties

• collectible, breedable virtual cats powered by the Ethereum blockchain

• 50,000 "Gen 0" cats, released & auctioned every 15 mins.

• breeding at regulated rate with sire chosen by reverse auction

• smart contracts to control breeding rate, genetic trait transfer, etc.

• 180,000 people love cats with $20M

• this cat sold on Sept. 4, 2018 for Ξ600 (Eth) ≅ $USD 172,000 !

Blockchain--Implications for Legal Practice

agenda

• Background

• Blockchain primer
  – a brief history
  – the business model
  – the technology

• Application of blockchain
  – finance, government, law enforcement, tax, supply chain, sovereign identity, rights, insurance, energy...
  – the Law

• Question time
Blockchain--Implications for Legal Practice

**background**

- The State of the legal industry:
  - *clients bringing more work in-house, trimming panels...*
  - *high profits attracting non-traditional competitors--LPOs, the Big 4*
  - *emergence of highly specialized, vertically-integrated firms*
  - *the unfolding impact of digital commerce, jurisdiction-less transactions, contract standardization...*

- Law firms meet the production function

\[ Y = \begin{aligned} \text{production rate of capital/technology (K) substitution for labor (L)} \end{aligned} \]
Blockchain--Implications for Legal Practice

Optimization of Legal Practice

- **Optimize resources**
  - Near-/off-shoring (cost arbitrage)
  - Process mapping & process refinement

- **Optimize delivery**
  - Predictive analytics (matter pricing, case strategy planning...)
  - Legal Project Mgmt. (matter execution)

- **Automate execution**
  - Artificial Intel.
  - Robotic process automation
  - Smart contracts (blockchain)

**Wave 1 -- 2010**
- law firm mergers to maintain economies of scale
- mirrors corporate behavior... labor arbitrage, process optimization
- the rise of the machine...

**Wave 2 -- 2014**
- Predictive analytics (matter pricing, case strategy planning...)
- Legal Project Mgmt. (matter execution)

**Wave 3 -- 2016**
- Artificial Intel.
- Robotic process automation
- Smart contracts (blockchain)

Broad application of technology to automate aspects of the practice with firms adopting technology to transform the practice of law.

Legal industry's response
- law firm mergers to maintain economies of scale
- mirrors corporate behavior... labor arbitrage, process optimization
- the rise of the machine...

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Hofstra University
Maurice A. Deane School of Law

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Blockchain--Implications for Legal Practice

*a brief history*

*Satoshi Nakamoto* proposes payments system for peer-to-peer transactions without need for a trusted authority.

Trust against double-spending is achieved by *distributed consensus*. Transactions are broadcast to a network whose nodes record transactions in a linked chain. The record & chain cannot be altered without consensus of the network... a *distributed ledger* that is Byzantine fault tolerant.

Later innovations--notably Ethereum--extended this model by enabling a blockchain-based distributed computing platform with *smart contract* (scripting) functionality. See the Accord project, which develops schemata, templates & a legal contract programming language.

*Blockchain is also called a Distributed Ledger (or more correctly a Replicated Ledger)*

**Ethereum DAO collapses**

**Ethereum goes live**

**Initial Bitcoin implementation**

**BTC: 1 year +70%... +400% 12/18!**

**Bitcoin estimated energy consumption 73.12 TWh (the same as Austria !)**
Blockchain--Implications for Legal Practice

Business models

Traditional model

- Suppliers
- Entrants
- Industry rivalry
- Substitutes
- Buyers

Market grows to price inefficiency from over concentration

New blockchain-enabled model

- Lat, Long → deg Celsius
- O2
- S5
- S1
- S2
- S3
- S4
- O1
- £ → € long call

A North Sea Gas hedge trade algorithm based on weather & £ → € futures

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Blockchain--Implications for Legal Practice

the technology (architecture)

Applications

Identity

Smart Contracts

Utility

Token

Assets

oracles

crypto- & stable-coins
deads
securities
collectables
patent families
commodities & futures

Platforms

Tangle

Quorum

Hedera

Etherium

Hyperledger

R3 Corda

rights, discounts & rebates
Examples:

- BlockOne™ ID maps digital identities to Ethereum addresses, securing & controlling access to apps.
- BlockOne™ IQ for private ledgers allows smart contracts to use signed content from a trusted source, providing counterparties with a high level of trust that the content has not been tampered with.
- Future: legal events such as termination clause conditions such as change of control, bankruptcy, criminal charges
pragma solidity ^0.4.10;  // A storm event oracle smart contract

contract StormOracleInterface
address stormOracleAddress;

contract StormOracle

String public lastBigStormName;

string public lastBigStormName;

contract StormOracleClient is StormOracleInterface

function stormNotificationCallback(string _stormName)

function requestStorminessNotification()

function stormNotificationCallback(string _stormName)

blockchain

Implications for Legal Practice

the technology (smart contracts)

Smart Contract is "a computerized transaction protocol that executes the terms of a contract..." (Nick Szabo 1994)

• Contract T&Cs are codified, deployed & executed (forever!) on the blockchain

• Predetermined event triggers interrupt (or terminate) smart contract execution

• Examples: ISDA agreements, leases, parametric insurance, travel loyalty programs...

• Future: the intersection of Ricardian & smart contracts using contract templates (smart term sheets perhaps)

Programming languages include Solidity, Go, Javascript

pragma solidity ^0.4.10;

contract StormOracleInterface

address stormOracleAddress;

event OhMyGodThereIsASTorm(string stormName);

contract StormOracle

string public lastBigStormName;

StormOracleInterface[ ] subscribers;

function requestStorminessNotification()

external { emit StorminessSubscriptionEvent(msg.sender); };

contract StormOracleClient is StormOracleInterface

function stormNotificationCallback(string _stormName)

public { emit OhMyGodThereIsASTorm(_stormName); }
Blockchain--Implications for Legal Practice

**application of blockchain**

- **Government**
  - land & property registry
  - voting rights
  - real time tax collection
  - bond issuance
  - corporation registration
  - UCC filings

- **Justice Admin.**
  - criminal/parole history, expungement
  - warrants/protection orders
  - offenders' registry
  - court judgments/levies
  - post-judgment updates

- **Self-Sovereign Identity**
  - verifiable claims
  - & digital credentials (see sovrin.org)
  - Bar status, CLE credits
  - licenses, passports
  - tickets, boarding pass!

These applications exercise the tamper-resistant aspects of the blockchain ledger.
Blockchain—Implications for Legal Practice

**application of blockchain -2**

Supply Chain Automation
- international shipments & customs' clearance without bills-of-lading
- energy marketplace
- supply chain "sanitation"

Parametric insurance
- automatic claim payment on notice of covered event
- travel insurance e.g. www.fizzy.axa

These applications use the smart contracts features of some blockchains.

- automation of complex multi-step processes, e.g. in automobiles
- permissions enforcement
- solar panel negotiation
- rate limiting e.g. HoV lane
Blockchain--Implications for Legal Practice

**Trust network**

- Global Legal Blockchain Consortium (2017) driving adoption and standardization of blockchain in the global legal technology ecosystem
  - Goal: universal, blockchain-based identities – client, matter & document on Integra Ledger
- Chamber of Digital Commerce promoting the acceptance & use of digital assets and blockchain-based technologies
  - education, advocacy with policymakers, regulatory agencies and industry

**Contract standardization**

- Accord Project (2017) open source software initiative to develop technology and standards for smart contract applications
- Enterprise Ethereum Alliance Legal Industry Working Group (2017) focused on education on blockchain and developing core technology for legal applications including standards for "smart" legal agreements
- R3 Legal Center of Excellence (2018) 10 global firms helping draft smart contracts on Corda network & education on emerging legal and regulatory issues
Blockchain--Implications for Legal Practice

Blockchain Coverage in Primary Law

Key

- **Statutes enacted**
- **Regs. published**
- **Cases tried**
- **Appeals heard**

2d.Circuit
Del. Chancery

CFR 12. Banks & Banking
CFR 17. Commodity & Securities Exchanges
**Telegram Messenger Inc. v. Lantah, LLC**
United States District Court, N.D. California. - August 08, 2018 - Slip Copy - 2018 WL 3753748

Plaintiff Telegram Messenger and Defendant Lantah LLC are both developing cryptocurrencies, and they are both planning to use their respective cryptocurrencies named "GRAM." Telegram seeks an injunction barring Lantah from using "GRAM." See MPI (dkt. 16). Telegram asserts that it has a common law right to the GRAM mark because it used the...  

...MPI at 13; see also Perekopivska Dec. ¶ 9 (since 2017, Telegram "has been using that mark in connection with its development of a cryptocurrency for use on the TON Blockchain, including providing purchase agreements in respect of this cryptocurrency, its development of software to provide access to financial products and services for customers on the TON Blockchain")...  

...Id. ¶ 7. Telegram is developing a new distributed ledger platform, the Telegram Open Network or "TON" Blockchain, which will improve upon the existing systems...

**Commodity Futures Trading Commission v. McDonnell**


SECURITIES REGULATION - Commodity Futures. Virtual currencies are "commodities" subject to the CFTC's regulatory protections.

- Show synopsis

**Background:** Commodity Futures Trading Commission (CFTC) brought action against trader of virtual currency and his company, alleging that defendants operated a deceptive and fraudulent virtual currency scheme for purported virtual currency trading advice, purchases, and trading, and that they misappropriated investor funds, in violation of the Commodity Exchange Act (CEA). Individual defendant, proceeding pro se, filed motion to dismiss for lack of jurisdiction.

**Holdings:** The District Court, Jack B. Weinstein, Senior District Judge, held that:
Blockchain--Implications for Legal Practice
current practice

How the nominal US large law firm earns fees

- Bankruptcy
- Antitrust
- Environmental
- Lobbying/Public Policy
- Trusts & Estates
- Copyright & Trademarks
- Litigation – Ins. coverage
- Tech. Txns & Licensing
- Litigation – Ins. Defense
- Patent Dispute Resolution

3 years of TR Peer Monitor
55 AmLaw100 firms
~260M hours, $131.5B billed
Blockchain--Implications for Legal Practice

evolving practice

• Blockchain extends the range of traditional legal practice:
  — **advisory**: startup formation, capital markets, ICOs, IP, regulatory risk...
  — **advocacy**: criminal, civil, securities, IP, antitrust, commercial, corp. governance
  — **augmentation**: extending legal practice with blockchain... technologies

Exploiting
Adopting commercial solutions to support cost-constrained practice areas

Value creating
Supporting the changing nature of legal work

Transforming
Enabling new lines of business & differentiating service offerings

• **conveyancing, escrow, title registry, contracts, lease renewals, eFiling, P2P deal rooms**

• **M&A... IP portfolio patent/TM registration smart term-sheets privacy, anonymity justice admin.**

• **trust & insurance administration template publishing ICO fees (JurisCoin?)**
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