

What Even Is Blockchain Property?

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Part I:
Tangible Property

A paradigm

- Property in *physical* and *movable* things
 - Common law: “personal property”
 - Civil law: “movables”
- Key attributes:
 - Rivalrous: one use at a time
 - Exclusive: one possessor at a time

Why property law?

- Alice has a car. Bob uses a tow truck to haul it away. Alice sues Bob. *Who gets the car?*

Why property law?

- Alice has a car. Bob uses a tow truck to haul it away. Alice sues Bob. *Who gets the car?*
- *Answer: Alice*
 - Bob's current *possession* of the car does not make him the *owner*
 - Ownership = who is *entitled* to possession?
 - The legal system enforces ownership

Ownership can change

- Alice has a car. She sells the car to Bob, who pays in cash. Alice keeps the car. *Who gets the car?*
-

Ownership can change

- Alice has a car. She sells the car to Bob, who pays in cash. Alice keeps the car. *Who gets the car?*
- *Answer: Bob*
 - The transaction changes ownership
 - The car itself doesn't change
 - I.e., Alice could still have possession while Bob receives ownership

Invalid transactions

- Alice has a car. She sells the car to Bob, who pays with a bad check. *Who gets the car?*



Invalid transactions

- Alice has a car. She sells the car to Bob, who pays with a bad check. *Who gets the car?*
- *Answer: Alice*
 - The transaction only works to transfer ownership if Bob carries out his part
 - I.e, Bob could receive possession while Alice retains ownership

Chain of title

- Alice has a car. She sells it to Bob, who sells it to Carol. *Who gets the car?*

Chain of title

- Alice has a car. She sells it to Bob, who sells it to Carol. *Who gets the car?*
- *Answer: Carol*
 - When Alice sells the car to Bob, he gets all her rights, including the right to sell
 - Carol's *chain of title* traces through Bob back to Alice

Third-party rights

- Alice has a car. Bob steals it and sells it to Carol. *Who gets the car?*

Third-party rights

- Alice has a car. Bob steals it and sells it to Carol. *Who gets the car?*
- *Answer: Alice*
 - “A thief takes no title and can give none.”
 - Bob has *void title*, and can give Carol only what he has: possession
 - Carol can get her money back, if she’s lucky

Good-faith purchasers

- Alice sells a car to Bob, who pays with a bad check. He sells it to Carol, who doesn't know the check was bad. *Who gets the car?*

Good-faith purchasers

- Alice sells a car to Bob, who pays with a bounced check. He sells it to Carol, who doesn't know it bounced. *Who gets the car?*
- *Answer: Carol*
 - Bob had *voidable title*
 - Carol is a *good-faith purchaser for value*
 - Alice can get paid by Bob, if she's lucky

Part II: Blockchain Property

Blockchain possession

- Possession of a car is physical control: having it in your garage, having the keys, etc.
- Possession on the blockchain is also control ...
 - ... via knowing a private key
 - If you have the key, you can move assets
 - If you don't have the key, you can't

Assets on the blockchain

- Coins, tokens, smart-contract rights, etc.
- All of these things are:
 - *Intangible*: no physical existence
 - (Underlying computers are physical)
 - *Rivalrous*: different users block each other
 - *Exclusive*: keys can be kept secret

Property is possible

- Blockchain assets *function* like physical things
 - Even though they are intangible
- The legal system *could* treat them as property
 - Apply personal/movable property doctrines
 - Chain of title, void/voidable title, etc.
- But should it?

Three possible attitudes

- Blockchain assets *are not property*
 - They're like Monopoly money: not real, and having no value. The legal system stays out.
- The blockchain describes *possession*
 - So the blockchain could be wrong
- The blockchain describes *possession and ownership*
 - So the blockchain is always right

What's the difference?

- If the blockchain is possession, then the legal system might order assets transferred on-chain
 - Of course, it might still fail—the possessor might be anonymous, or overseas, or defiant
 - But if the blockchain is nothing, or is ownership, the legal system won't even try
- If the blockchain is ownership, theft can be punished; if it's nothing, theft is allowed

Part III:
Cases revisited

Why property law?

- Alice has 10 Bitcoin. Bob hacks her computer. Alice sues Bob. *What result?*

Why property law?

- Alice has 10 Bitcoin. Bob hacks her computer. Alice sues Bob. *What result?*
- *Nothing*: Bob keeps the Bitcoin
- *Possession*: Bob must return the Bitcoin
- *Ownership*: Bob must pay Alice for their value

Ownership can change

- Alice has 10 Bitcoin. She sells them to Bob, who pays in cash. Alice keeps the Bitcoin.
What result?



Ownership can change

- Alice has 10 Bitcoin. She sells them to Bob, who pays in cash. Alice keeps the Bitcoin. *What result?*
- *Nothing*: Alice keeps the Bitcoin and the money
- *Possession*: Alice must give Bob the Bitcoin
- *Ownership*: Alice must give Bob a refund
- (This is what atomic transactions are for ...)

Invalid transactions

- Alice has 10 Bitcoin. She sells them to Bob, who pays with a bad check. *What result?*



Invalid transactions

- Alice has 10 Bitcoin. She sells them to Bob, who pays with a bad check. *What result?*
- *Nothing*: Bob keeps the Bitcoin without paying
- *Possession*: Bob must return the Bitcoin or pay
- *Ownership*: Bob keeps the Bitcoin but must pay
- (This is what atomic transactions are for ...)

Chain of title

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Chain of title

- Alice has 10 Bitcoin. She sells them to Bob, who sells them to Carol. *What result?*
- *Nothing*: They're Carol's
- *Possession*: They're Carol's
- *Ownership*: They're Carol's

Third-party rights

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Third-party rights

- Alice has 10 Bitcoin. Bob steals them and sells them to Carol. *What result?*
- *Nothing*: Carol can keep them
- *Possession*: Carol must return them to Alice
- *Ownership*: Carol can keep them, but Bob must pay Alice for their value

Good-faith purchasers

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- Alice sells 10 Bitcoin to Bob, who pays with a bad check. He sells them to Carol, who doesn't know the check was bad. *What result?*
- *Nothing*: Carol can keep them
- *Possession*: Carol can keep them, but Bob must pay Alice for their value
- *Ownership*: Carol can keep them, but Bob must pay Alice for their value

Part IV:
Closing thoughts

There is no easy answer!

- None of these paradigms is ideal
- Nothing leaves people vulnerable to violence, hacking, etc.
- Possession encumbers the blockchain with lots of off-chain facts about assets' history
- Ownership might be a good compromise, or the worst of both worlds

The legal system exists

- A day may come when the blockchain replaces law ... but it is not this day
- For now, the legal system is still here, and it still has to deal with everything off-chain
- There are real, high-stakes blockchain lawsuits and the legal system has to decide them

Forever problems

- Blockchains solve some specific, significant problems: double-spending and atomicity
- But these are just some of the many kinds of problems that property law has to deal with
- Property on the blockchain also has to have answers to violence, theft, fraud, and mistake
- Property law may have useful things to teach

Questions