AGENDA: PROPERTY – AUDREY CHAING AND KAI STINCHCOMBE

Challenges in real property title systems in the US

The titling of real property is a tremendous driver of economic empowerment. Not having a clear title to your property makes you vulnerable to fraud or expropriation.[1] In contrast, clear title enables you not just to protect your ownership of the property, but also to improve the property, sell it, or leverage it as a financial asset.

Property Ownership Is Complicated

Figuring out who owns property is surprisingly complicated. For one thing, real property itself is complicated – it's not just an invisible square on the ground, but might include water rights, mineral rights, air rights, easements that allow other people to access the property, liens for taxes, mortgages, loans, or other improvements, and so on. The boundaries of your property might move in an earthquake, or with rising sea levels or erosion. And historical conveyances could be vague – for example a will might a hundred years ago have left "all my property within San Francisco" rather than a specific set of lots, making exhaustive searches tremendously difficult.

Title Authentication

For another thing, authenticating and understanding the set of transactions that occurred can be complicated. If someone forged a bill of sale, or fraudulently persuaded you to sign it, that's then recorded at the registrar's office, the rightful ownership of your home may still be yours, irrespective of what's on file.[2] Suppose there's a second bill of sale after that, in which the forger or fraudster re-sold the home to someone else. Who owns it now, and how would someone reading the records know? And should the buyer, the seller, an insurer, or the taxpaying public bear the cost of an incorrect interpretation of the title history?

<ins>The Torrens system vs common law title histories</ins>

There are two responses to the problem of titles. One, called the Torrens system, *defines* the latest version of the government-kept record (e.g. at the county recorder's office) as correct. If I'm considering buying a house from you, I can go to the recorder's office, verify that you own the house by reading the record, and feel confident. If I'm writing you a mortgage, same thing – I know my lien is valid because the title says so.

In a common law system, the entire chain of title is subject to scrutiny. Suppose I get a notice that my home has been foreclosed on for nonpayment of back taxes and I rush out and sell it to someone else before the tax lien is published at the recorder's office, pocketing the money and leaving the country. That buyer paid good money for a home,

but also the state seized it a week ago. Under a common law system, that person should have done their research, examining the full record to make sure I was the unencumbered owner of the home, before paying for it (and should have bought insurance in case the research was incorrect or incomplete).

Why Torrens title didn't catch on in the US and California

Despite their intuitive appeal, Torrens title systems have had little success in the US, with many states (including California[3]) having adopted the system only to repeal it some time later. This is for three reasons.

The first is simple poor implementation – which is sort of unfair to hold against the concept itself, except that governments are sometimes apt to poorly implement a system and the Torrens title system is high-stakes in the case of poor implementation.

Second, the Torrens title system doesn't actually prevent the entry of inaccurate data into the record – in fact, it exacerbates the likelihood. For one thing, it removes the obligation to research the title anytime it's sold or encumbered, which means that an error or fraud is much less likely to get caught. For another thing, successfully placing a false record into a Torrens title record is a much greater windfall than in a common-law title record, because you're much more likely to be able to successfully sell the property as a result. In summary, fraud is easier to get away with and more rewarding to accomplish. So, for example, when the Torrens system was in place in Illinois, lenders ended up requiring title research also – they insisted the old system operate in parallel due to the prevalence of inaccurate registered titles.[4]

Third, it doesn't solve the problem of who pays for inaccuracy or fraud, it just points the arrow in a different direction. Under the common-law system, when fraud does occur (e.g. a home is fraudulently registered and then purchased), it's "caveat emptor" and the purchaser (or their title insurer) is out the money for doing poor research. Under the Torrens system, an assurance fund is created, supported by title-registration fees, to indemnify the victims of errors in the recorded title. In California, this fund proved not large enough, and went bankrupt in 1937.

There are challenges in common-law titles too

Noting these historical shortcomings of the Torrens system in the US is not to say that a common-law system is all that great! The entire process of title research and insurance seems like a burdensome (and expensive) solution to a problem that really ought not to exist.

Our goal is to consider how blockchain might address weaknesses historically identified in either a Torrens system scenario or in the current common-law scenario, reducing fraud, increasing efficiency, and reducing costs to the end user.

How could blockchain help as a government vendor?

Digital transformation

Let's first consider whether moving title registration systems into a modern, transparent data storage system (real time, standardized, structured, indexed, public) would be useful. Whether this was stored in Oracle or mysql (with read replication available to anyone who wanted, who could annotate as they chose) or on a blockchain-based system, one could imagine this would make title research easier and more conclusive. Easier title research would reduce fraud; in a competitive market reduced fraud might bring down insurance rates. Standardization across the state in an open format would bring down the costs of search technology, and might even help define a national standard. Privacy is also important (and protected by law) – a stalker isn't entitled to search for the new home his victim may have moved to.

Ultimately, creating a searchable public database of transactions affecting 13 million parcels is not the hardest thing ever to be done with computers in California! There are already county-level search tools and a firm that aggregates that data.[5] Making improvements to the technology, or making that system a public good rather than a private service, are one of many ways we could use Californians' tax dollars, but it does seem likely that the more we can improve and standardize the system, the more money we could save people on title insurance.

Permissioned blockchains as a datastore

Supposing we as a state decided to move to open standards, open APIs or feeds, and public, transparent data, still maintained by county recorders. Given that, we could choose a permissioned blockchain, or not, as the underlying datastore. Permissioned blockchain solutions may have advantages and disadvantages in how they accomplish validation and replication.

Ultimately, the success of any system depends on the software built into it or on top of it – how data is validated on the way in, who is offering to host replication servers, how errors are corrected, and what indexing and search tools are provided to the public on

top of the data store. Solutions can be built on either open source datastores (like mysql or postgres), on proprietary datastores (Oracle), or on blockchains.

Our position on this topic is that the proof is in the pudding: let the bidders describe the system they can build and the costs, let them choose the underlying technologies they will employ, and let the state's procurement officials select the most competitive bid. If blockchain offers an advantage, they will be well positioned to win in the marketplace. It should be noted that we recommend the procurement officials have access to skilled and unbiased technical review and assistance in order to evaluate proposals effectively.

<u>Unpermissioned or semi-permissioned blockchains as a datastore</u>

We might also suppose that, with the advent of blockchain technology, we should adopt more open rules around recording property transfers, in which members of the public could directly record property transactions in a distributed ledger.

While this is intuitively attractive, recall that the most complex and burdensome aspect of maintaining a non-Torrens ledger is preventing false data from entering the system. Absent tremendous progress in digital identity, we believe the types of title fraud commonly seen in the lived experience of the several states would be *increased* by such a system rather than *decreased*.

Consider the family in Brooklyn who were duped into signing an instrument that did not do what it was marketed as, the family who didn't trust the legal system and so preserved their title in traditional rather than formal ways, or the family who was unaware that one heir's sale of a stake in inherited property created a legal right to force a sale of the entire property (which an unscrupulous buyer accomplished, without notice and well under market value). Are we at a place with universal digital fluency, widespread adoption of best practices around password and private key protection, and secure personal computing systems where digitally signing such instruments remotely, rather than presenting them at a county recorder's office, would make it harder to accomplish fraud?

And, are there more incremental approaches – enabling property holders to receive notices by email or file documents electronically, for example – that would move us in the direction of accomplishing some of these goals, but without the drawbacks around potential for fraud?

We hope for a day in the future in which technology adoption and security are so widespread that a property transaction completed on an iPad with a password and MFA

key would be as accessible, traceable, and fraud-proof as a filing made with a driver's license and public notary. We don't believe that day is here yet.

Adopting a Torrens system (v1, v2, v3)

For the same reason, we do not believe the sometimes-made argument that blockchain's inherent fraud-resistance makes it fundamentally more attractive to adopt a Torrens title system than it was in the past. Let us consider three possible implementations.

(v1) is a Torrens title system implemented on a permissioned blockchain operated by county recorders. We do not see any reason that a permissioned blockchain is inherently more likely to be error-free or fraud-free than the existing system, and so do not believe new technology supports a move to Torrens any more than was the case in the past. (We are open to being proved wrong! If blockchain-implemented systems are adopted by counties based on the promise of error reduction, and if the error reduction proves dramatic, we would encourage later officers of the state to consider making the error-free blockchain-stored titles indefeasable. But we should rely on proof of error reduction, rather than assertion or hypothesis, before considering such a step.)

(v2) is a Torrens title system implemented on an unpermissioned blockchain. For the reasons described above, we believe this would be a disaster – both making it easier to perpetrate fraud and increasing the rewards to doing so.

(v3) imagines that the potential for fraudulent transactions being entered into the blockchain is reduced by using smart contracts or similar means. The transfer of title is atomic with the payment (using digital currency) for the property, so a false transfer definitionally does not exist. We are concerned about this for all the reasons above – what are the odds an unscrupulous person could
- find a dozen individuals who are inexperienced in using software or keeping their passwords secure and, by hacking their laptops, steal their homes;
- find a population of users who aren't able to evaluate the impact of the underlying software in a smart contract (something only the most skilled developers can do, and even so it's difficult!) and so sell property accidentally;
- find people who aren't well-equipped to protect a digital-asset balance equivalent to the price of a home, buy their homes and then steal the proceeds;
- find a bug in a commonly-used contract (consider the DAO) and steal a substantial fraction of the homes in California;

- and/or, hack a popular wallet, exchange, or other third-party system (the majority of leading exchanges have to date have been hacked resulting in loss of customer funds)?

We do not believe the technology is ready to seriously consider moving tens of millions of property owners collectively holding $4 trillion worth of real property in California onto a system such as this one. We believe if there was a voluntary system in which property owners could choose to move their property onto such a system, an overwhelming majority would prefer the safety of the current system. In contrast, if the adoption was mandatory and universal, it seems likely that just its first year adoption of a system like this would lead to thousands or even tens of thousands of homes being irrevocably and fraudulently transferred, and that the people of California would promptly cancel and reverse the entire experiment.

How could blockchain help private-sector actors?

We do not believe government commissions are typically best suited to identifying and exploiting new applications of emerging technology, which is why we aren't charged with founding and funding new companies, or identifying and prioritizing new initiatives within existing companies.

Besides the above (where we encourage counties adopting new data storage, validation, and replication systems to fairly consider blockchain vendors in competition with those using different underlying storage technologies), we also want to consider in our own modest way whether private-sector actors could benefit from blockchain technologies and whether there is a role for government to help.

We are especially interested in the internal technology tools that would enable title insurers (or mortgage lenders and other parties directly) to more efficiently and confidently validate title, or technology tools that give new entrants a competitive advantage in the space. We are very eager to see higher convenience, lower costs, and more competition in this space. To the extent that an existing insurer or lender, a new entrant, or a vendor or prospective vendor to these companies is asking for regulatory or legislative action to remove barriers to an internal adoption of blockchain technology and level the playing field, we encourage our state's leaders to be open, responsive, and expeditious.

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Summary of recommendations

1. We do not recommend California move to a Torrens title system at this time. We do not believe in the near future that the concerns about false or erroneous data entering the system can be significantly mitigated with technology. We therefore do not believe lenders and title insurers would rely on Torrens titles rather than title research, which would mean that Torrens title registration would become an *additional* process rather than a *replacement* process. Finally, we fear that fees high enough to cover the costs of errors in moving over would be quite burdensome, whereas if the fees were low, we might repeat the lessons of the past in which the costs of fraud and error may end up shifted to the taxpayers.

2. We are not experts in the pros and cons of adopting a single (even voluntary) standard for title history data storage among California's counties and adopting rules or laws making those datastores more publicly accessible (e.g. by download, feed, or API), and we do not have an estimate of whether cleaner, more standardized, and more available data would change insurance prices or other costs and inconveniences to the end user. However, it seems *likely* that such systems and standards would encourage innovation and competition and bring down costs. We would encourage further study (including cost estimates) of what the best data structure for these records is, what it would cost to migrate counties to a common standard, and what it would cost to make the data available in real time. This is a great opportunity for California to lead in open formats, open APIs, and open data as a way to spur civic technology.

3. To the extent that emerging technologies have the potential to make search, record validation, or detection of error or fraud cheaper, faster, or more accurate, we: encourage counties to consider blockchain technologies on an equal footing and to be forthcoming in providing new technologists the data they need; encourage lenders, title insurers, and other private-sector actors to eagerly adopt efficient new technologies; encourage new visionaries to enter the space; encourage governments and regulators to provide a level playing field and remove barriers wherever they are found; and encourage all parties, through competition, to pass the savings on to the end user.

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Footnotes

[1] https://features.propublica.org/black-land-loss/heirs-property-rights-why-black-families-lose-land-south/
https://www.nytimes.com/2019/06/20/opinion/sunday/reparations-hearing.html

[2] https://www.nytimes.com/2019/10/21/nyregion/deed-theft-brooklyn.html

[3] https://www.jstor.org/stable/3473595?seq=1#metadata_info_tab_contents
https://books.google.com/books?id=ZYZe2BjzkboC&pg=PP39&lpg=PP39&dq=california
https://heinonline.org/HOL/LandingPage?handle=hein.journals/uclalr29&div=25&id=&page=
https://open.mitchellhamline.edu/cgi/viewcontent.cgi?article=2565&context=wmlr

[4] https://www.chicagotribune.com/news/ct-xpm-1992-03-20-9201260194-story.html

[5]
https://assessor.saccounty.net/FrequentlyAskedQuestions/Pages/ParcelMapFAQs.aspx
https://www.parcelquest.com/
https://www.contracosta.ca.gov/552/Maps-Property-Information
https://www.sccassessor.org/index.php/online-services/property-search/searching-records-buying-maps

Case Studies That Could Be Incorporated Into Doc

Case Studies, Governments:

1. **Sweden:** The Swedish land registry (Lantmäteriet) is testing real estate transfers and other multi-party transactions on a private blockchain.
https://www.coindesk.com/sweden-demos-live-land-registry-transaction-on-a-blockchain
https://chromaway.com/aboutus/
   - As of June 2018, completed 3rd phase of ongoing blockchain pilot
   - "Unsurprisingly, the biggest barrier to changing the land titling system is not the technology itself, but laws and regulations that have been in place for years" from when project announced in 2017, https://www.coindesk.com/sweden-taking-chance-blockchain-land-registry

2. **United Kingdom:** Real estate tokenization, Her Majesty's Land Registry (HMLR) records ownership of land and property in England and Wales, collaborated with Consensys

https://codefi.consensys.net/hmlr

3. **Dubai, UAE:**

https://www.wsj.com/articles/dubai-aims-to-be-a-city-built-on-blockchain-1493086080?mod=article_inline

4. **Republic of Georgia:** April 2016 government partnered with Bitfury Group to register land titles via a private blockchain and make those transactions verifiable using Bitcoin's public blockchain

https://www.forbes.com/sites/laurashin/2017/02/07/the-first-government-to-secure-land-titles-on-the-bitcoin-blockchain-expands-project#12b14edf909e

5. **Honduras:** Factom, announced May 2015, government to build a land title registry using blockchain, since stalled since "property rights are in fact quite complicated, government moves slowly and technologically is not a cure-all panacea"

https://www.factom.com/

https://cadasta.org/blockchain-for-land-administration-hype-or-substance/

6. **Chicago (Cook County):** Velox did the pilot (www.velox.re is no longer a working website)
   - "Mirkovic said that the prerequisite to adopting blockchain at his office is to iron out the flaws in the state's current laws that allow data to remain unrecorded at the time of transactions, which would undermine the point of blockchain: to contain all available data about the transaction in one place."
   - https://www.chicagotribune.com/real-estate/ct-re-0715-blockchain-homebuying-20180628-story.html

Case Studies, Companies:

1. **Mata Capital –** French real estate fund management company sought to adopt blockchain to optimize processing of securities registers for its real estate investment products, partnered with Consensys

https://codefi.consensys.net/mata-capital

2. **TruSet and Imbrex:** TruSet and Imbrex Partner to Create the First Blockchain-Based State-By-State Collection of Residential Real Estate Contracts (June 2019)
   - "In the residential real estate industry, states use unique standards for purchase and sale agreements (PSAs). Some states, such as California and Colorado, do not require attorney involvement and contracts are standardized by local governments."
   - https://www.truset.com/news/2019/6/5/truset-and-imbrex-partner-to-create-the-first-blockchain-based-state-by-state-collection-of-residential-real-estate-contracts

3. **International Blockchain Real Estate Association/Velox** (same founder, but Velox went down it looks like)

https://ibrea.info/

4. **Not a company but tons of articles online about how people are using Bitcoin/crypto to purchase real estate** https://cointelegraph.com/news/5-cities-that-let-you-buy-real-estate-with-bitcoin