**A Functional Analysis of Smart Contracts: How can Colombian Conflict Victims’ Rights Over Land Be Guaranteed?**

Ángela Córdoba-Santacruz

**Abstract**

Land ownership in Colombia is costly and demands legal knowledge, which leads to less democratic access to the privileges of ownership. This post asserts that the Colombian Land Property Regime (CLPR) calls for extensive burocracy and difficulties in its application, especially for those small farmers, who, as a product of the armed conflict, have been dispossessed from their land in rural zones. Under the current regime, once the conflict has ceased, the farmers could return to their land. However, the CLPR imposes unfair limitations. Taking into account foreign experiences, this paper argues that smart contracts may help overcome those problems, reducing registry costs and preventing the risk of fraudulent alteration of land registration.

1. **Introduction**

Over the years, Colombia has been involved in an inaccurate model of occupation, control, distribution and use of the land.[[1]](#footnote-1) Factors such as internal armed conflict, corruption, and drug trafficking have led to an unequal repartition of the land, environmental problems, and forced displacement of small farmers.[[2]](#footnote-2) In particular, farmers who have been forced to leave their land are not just suffering from social, economic, and psychologic consequences of looking for new means of livelihood.[[3]](#footnote-3) They are additionally dealing with a burdensome legal regime. The current CLPR ensures neither a return to the land that farmers themselves once occupied,[[4]](#footnote-4) nor access to a new land if return is not feasible.

Under the view of forced displacement, the legal issue related to land is two-dimensional: First, there are major barriers to accessing the privileges of ownership.”[[5]](#footnote-5) Second, the property registry system is flawed and subject to fraudulent alteration.

Consequently, the current debate over the CLPR can be viewed as a tension between maintaining an antique civil law tradition or accepting new technological models to increase democratic privileges of being an owner. This post argues that with smart contracts, displaced farmers would potentially have more judicial warranties available to return legally to their land.

To advance this argument, Part II will describe the background of the CLPR and the difficulties of applying it in rural zones. Part III will discuss difficulties of displaced people in obtaining owner privileges, and the registry system’s manipulation. Part IV will analyze smart contracts about registration data, taking into account the British experience and how to tackle the issue at hand through the use of blockchain technology.

1. **Background: Colombian Land Property Regime and Application in Rural Areas**

***II.I Colombian Land Property Regime in a Nutshell***

The land property regime in Colombia is a civil law heritage that comes from the Napoleonic Code.[[6]](#footnote-6) This regime calls for the fulfilment of two different factors: First, the combination of a title and a mean to acquire (*título* and *modo),* and second, registration of the land. Once these two factors are satisfied, a person becomes a lawful owner and has all the privileges -*ius in re-* associated with the land.[[7]](#footnote-7)

***Título y modo***

*Título* is a fact which generates obligations and *modo* is the path to achieve the *título.[[8]](#footnote-8)* The *título* may be a contract, a court ruling, or the law. *Modo* may be occupation, selling, or possession. For clarification, it is necessary to define the following:[[9]](#footnote-9)

Occupation *(Ocupación)*[[10]](#footnote-10) is one of the paths to acquire a public vacant land, as long as the government is willing to do so. For example, Private Person A (“Occupant”) can inhabit certain acreage of land of Colombian domain, and eventually becoming a landlord if the State of Colombia (Public Person B) decides to assign this acreage to the Occupant.

Selling *(Tradición)*[[11]](#footnote-11) is one of the paths to acquire private land. The buyer has the faculty and intention to transfer the domain, and the seller has the capacity and intention to acquire it. This is the traditional model which follows a purchase agreement. For instance, Private Person A acquires the domain of 11 acres when Private Person B decides to transfer it.

Possession *(Posesión)*[[12]](#footnote-12) is one of the paths to acquire private land after having occupied it for a certain period of time[[13]](#footnote-13) and proving that the occupant during that time acted as the owner of the land.[[14]](#footnote-14) For instance, Private Person A inhabits Private Person B’s land for a term and considers himself to be the owner under rational basis.[[15]](#footnote-15) Here, after a judicial process, Private Person A will become a lawful owner.

***Registration***

Once the *título* and *modo* are met, the second step is to register land with a public entity. Without the second step, the person is not yet considered as landlord under Colombian law.[[16]](#footnote-16)

Before the registration process, the *título (e.g. purchase agreement)* must be re-written by a public notary. The notary re-writes, attests, certifies and keeps hard copies of the document. These services demand some administrative fees of 0.54% of the land value, 1% state taxes, and different percentages of regional taxes, depending on where the land is located.[[17]](#footnote-17) When the document is re-written, it becomes public and can be viewed freely. At this stage, this document is called “property deed.”

Even during this administrative process, a purchaser is not yet considered an owner. In order to be recognized as the owner, the person must register the property deed with the Registry Office, and pay an additional fee of 1.67% of the land value.

Thus to be considered as an owner, there is an additional fee of 3.3% of the total value of the land to complete.

***II.II Application of the regime in rural areas***

It can be argued that generally, landownership in Colombia is a cumbersome, grueling, and above all, costly process. However, it is extremely burdensome in rural areas, and Colombia is a rural country.

In 2015 figures, the Agustín Codazzi Geographic Institute, public entity in charge of disseminating information and knowledge in cartography, agrology, cadastre, among others, mentions that 99.6% of the entire Colombian territory is represented in rural areas, just 0.3% is urban[[18]](#footnote-18). In terms of landownership, near to 52% of the land is owned by the 1.5% of the population, boosting an unequal distribution which increases poverty levels[[19]](#footnote-19). Consequently, even though the rural land occupies almost the whole country, this land belongs to the richest 1%[[20]](#footnote-20). This analysis is meaningful to evaluate the economic conditions to obtain owner privileges.

In addition to these figures, most small farmers do not fulfil with the *título, modo* and registration steps. Usually, the small farmers occupy, possess or sell the land, without registration. This can be attributed to lack of knowledge (a general fallacy believing that signing a purchase agreement is enough to transfer titles and become an owner) coupled with the abovementioned high transaction costs.

1. **The problem is worse for displaced people. Lack of legitimacy of their rights and fraudulent alteration of the registry system.**

If the Colombian peasantry barely possess, at least on paper, their rights as owner, the situation for displaced population due to violence is not more encouraging. According to the UN Refugee Agency, in Colombia 7.7, million people are being forced to flee by internal conflict and persecution, making Colombia one of world´s top countries with more displaced people, just behind Syria. Before the displacement, some of these people held duly registered property deeds, others were occupants or possessors.[[21]](#footnote-21) This differentiation is critical to understand who is entitled to enter a land restitution program. As it will be explained later, depending on whether a person is an occupant, a possessor, or a seller, the regime will apply differently..

In 2011, the Congress of Colombia, as a demonstration of restorative justice, enacted “The Victims and Restitution de Land Act” *(Ley de Víctimas y Restitución de Tierras)*. This statute creates a legal procedure to redistribute land to victims of dispossession and forced abandonment[[22]](#footnote-22). Simply put, the State of Colombia aimed to re-located displaced people in the same land they lived before the violent interruptions.

Although the law has praiseworthy intent and purpose, its implementation has been fraught with challenges in practice. The law requires claimants to demonstrate ownership of the land they claim by providing property deed through the registry[[23]](#footnote-23). This burden could be seen from two approaches: (i) for those who had obtained a prior property deed and also had paid registration fees, just as it is necessary looking into the book records in the hard copy[[24]](#footnote-24). Nevertheless, (ii) for those who had not had an official property deed, nor had paid the registration, the burden of proof is remarkably high[[25]](#footnote-25). They must demonstrate the occupation or possession under other means of proof that are more expensive than just checking a hard copy.[[26]](#footnote-26)

The land registration system reveals concerns about the unequal property land regime in Colombia: poorer and disadvantaged communities bear a heavier burden in claiming ownership over land. While some can easily meet requirements for registration and obtain the property deed to easily prove their rights over land, and thus their eligibility for restitution, the vast majority who just have been inhabiting a land, which they believe belongs to them, may incur in additional expenses without the promise of a favorable restitution.

Finally, the registry system is subject to threats, compromising its integrity. The registry may be tampered with fraudulent information. When organized criminal groups deprive others of their rights over the land, they can obtain a registry for a “front man”[[27]](#footnote-27) by making up purchases agreements and register them in the public office[[28]](#footnote-28). At the end, the criminal groups will obtain through their front man a legal advantage over small farmers, as the front man is registered on a *prior in tempore, potior in iure* (“first in time, first in right”) basis.

1. **Using Smart Contracts to solve the land registry problem**

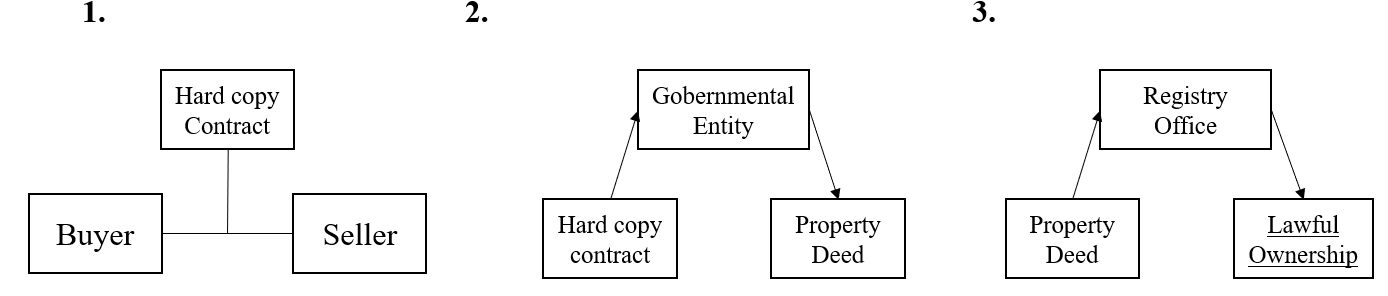
The use of decentralized blockchain-based system as computerized means to agree to terms and conditions has been widely discussed.[[29]](#footnote-29) Parties can translate contractual language into a code representing “the mature end of the evolution of electronic agreements, … achievement of significant cost savings and efficiency gains, [and a] secure exchange of value without mutual trust.”[[30]](#footnote-30)

Recently, it has been discovered that smart contracts may be used in real estate registration. By taking advantage of blockchain’s ability to run resiliently and resist tampering,”[[31]](#footnote-31) governmental entities such as Her Majesty Land Register has developed a tool to record land and property ownership data in England and Wales[[32]](#footnote-32). This tool deploys smart contract technology to achieve a fast, simple, and open approach to data. Because the registry chain is unalterable, the risk of fraud is minimal[[33]](#footnote-33). Additionally, because the projected model will be more concentrated on one sole database avoiding processes, the costs and fees associated with the registry could be reduced[[34]](#footnote-34).

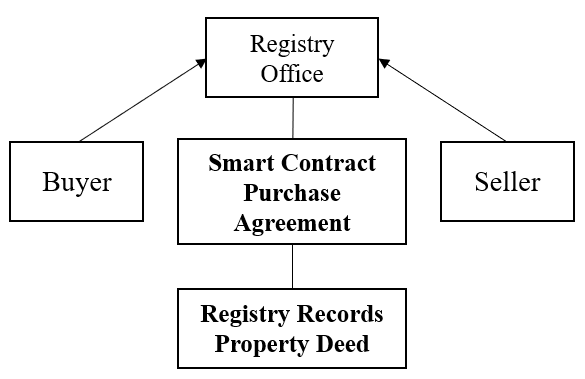
The Business Strategy 2017-2022 is part of the HM Land Registry’s smart contract implementation objectives. According to the strategy, the registration of land in the United Kingdom will achieve a (i) global control of the land in England and Wales, and (ii) protection the integrity of the registry from fraud is a risk that constantly evolves[[35]](#footnote-35).

Therefore, based on this experience (which is under construction), can Colombia adopt a similar model to tackle the conflict victims’ problem, guaranteeing their rights? Theoretically speaking, it can.

***Current Scheme:***



***Purposed Scheme:***



This model follows the English experience, and would require the combination of the *título, modo,* and registration, all under the head of the Colombian Registry Office. The upshot is that this office would serve as an intermediary between buyer and seller, and as an independent one would be in charge of codifying the data embedded in the body of purchase agreements. Likewise, the Registry Office will inspect the code and ensure that it represents the business logic.[[36]](#footnote-36)

The advantages of this model are clear. On one hand, the bureaucracy of the current legal regime would be diminished, which leads to fewer registration expenses, making the process more democratic. On the other hand, because the inherent nature of blockchain as a distributed ledger, the data cannot be altered, making transactions more transparent. Nevertheless, this model has a remarkable drawback: it would only prospectively apply to future transactions; *current* victims seeking restitution would be attached to the traditional system.

If adopted in the proposed form, the model would empower not just displaced people, but all occupants, possessors, and buyers without previous registration to undertake in one simple step a new efficient registration method. Due to its characteristics of attainability and traceability, this system would provide proof necessary to obtain their land back in restitution cases.

The starting point for this proposal is a national challenge; essentially a political one. The law will change the CLPR by eliminating one duty to the notaries, which is generating revenues for the Nation. Additionally, the government might be reluctant because a budget is necessary to create and maintain the blockchain system.

1. **Conclusion**

In the aftermath of the unequal legal land regime of Colombia, small farmers and displaced people are left severely affected. Grueling land registration processes have granted more and unequal legal privileges to people who were not necessarily occupying or possessing the land. This failure raises concerns about the effective protection of conflict victims´ rights, whose proof of burden is often more expensive and more difficult to obtain, since they have to opt for different methods to prove that they were either occupying or possessing the land before being displaced.

This post proposes the solution of implementing smart contracts technology in real estate registration., With this system, registration costs could be reduced, and operation traceability could be clearer.

**References**

Agustin Codazzi Geographic Institute. 2015. Letter from the Director regarding distribution of land in Colombia. https://noticias.igac.gov.co/en/contenido/tan-solo-el-03-por-ciento-de-todo-el-territorio-colombiano-corresponde-areas-urbanas-igac (last visited November 23, 2018).

De Filippi, and Aaron Wright. 2018. *Smart Contracts.* Blockchain and the Law. *Harvard University Press.*

Dion, Michelle, and Catherine Russler. 2008. Eradication Efforts, the State, Displacement and Poverty: Explaining Coca Cultivation in Colombia during Plan Colombia. *Journal of Latin America Studies. Cambridge University Press.* August 2008*.*

Human Right Watch. 2013. The Risk of Returning Home: Violence and Threats against Displaced People Reclaiming Land in Colombia. <https://www.hrw.org/report/2013/09/17/risk-returning-home/violence-and-threats-against-displaced-people-reclaiming-land> (last visited November 26, 2018).

Osorio, Flor and Mariana Ortega. 2008. Forced Displacement among Rural Women. *Latin American Perspectives,* Vol 35 No. 6. Sage Publications. November 2008.

Rincon, Belky. 2014. ¿Por qué ha funcionado la restitución de tierras en nuestro país y no en Colombia? *Economics School, Universidad Nueva Granada.* Bogotá, Colombia.

Surden, Harry. 2012. Computable Contracts. *University of California, Davis Law Review*. 46: 629-700.

Tascón, Tulio Enrique. 1953. Historia del Derecho Constitucional Colombiano. *Lecciones de historia política. University of Externado.* First Edition. Bogotá, Colombia.

Thomas, Stefan, and Evan Schwartz. 2018. A Simple, Powerful Approach to Smart Contracts. *White Paper*. Available at: <https://github.com/codius/codius-wiki/wiki/White-Paper> (last visited November 26, 2018).

United Nation Refugees Agency. Annual Statistical Yearbooks. Figures at a Glance. <https://www.unhcr.org/en-us/figures-at-a-glance.html> (last visited November 25, 2018).

Useche Hernandez, Guillermo. 1967. De la pérdida de dominio de la propiedad rural en Colombia. *University of Rosario.* Bogotá, Colombia.

Werbach, Kevin, and Nicolas Cornell. 2017. Contracts *Ex Machina. Duke University.* 67: 313- 382.

Wiesner, Guillermo. 1980. Cien años de desarrollo histórico de los precios de la tierra en Bogotá. *Corporación Centro Regional de Población.* First Edition. Bogotá, Colombia.

1. Useche, 1967, p. 12; Wiesner, 1980, p. 8. [↑](#footnote-ref-1)
2. Dion and Russler, 2008, p. 404. [↑](#footnote-ref-2)
3. Osorio and Ortega, 2008, p. 31. [↑](#footnote-ref-3)
4. Rincón, 2014, p. 13. [↑](#footnote-ref-4)
5. In Colombia, the ownership or property is defined as the right over a good in order to use, enjoy or dispose of it. See, Article 669, Colombian Civil Code (CCC). The Spanish version of the Colombian Civil Code can be found at <http://www.secretariasenado.gov.co/senado/basedoc/codigo_civil.html> [↑](#footnote-ref-5)
6. Tascón, 1953, p. 83. [↑](#footnote-ref-6)
7. The ownership privileges are a Constitutional Right. See SU-454, Justice Gloria Ortiz Delgado (2016), in where the Constitutional Court of Colombia (last interpreter of the Constitution) discusses this issue. [↑](#footnote-ref-7)
8. Second Book, Title I, Chapter I CCC. [↑](#footnote-ref-8)
9. Note that these meanings are limited under a land property regime perspective -res mancipi-. These definitions could vary depending on the nature of the goods. [↑](#footnote-ref-9)
10. Article 685, CCC. [↑](#footnote-ref-10)
11. Article 740, CCC. [↑](#footnote-ref-11)
12. Article 2512, CCC. [↑](#footnote-ref-12)
13. Usually, after five consecutive years [↑](#footnote-ref-13)
14. Not on behalf of any other person [↑](#footnote-ref-14)
15. Note that all the Persons A could have different legal nature depending on the *modo* to follow. [↑](#footnote-ref-15)
16. Article 756, CCC. [↑](#footnote-ref-16)
17. Resolution No. 0858 of 2018, Superintendence of Notary and Registration Services. [↑](#footnote-ref-17)
18. See Agustin Codazzi Geographic Institute 2015 Report, available at: <https://noticias.igac.gov.co/es/contenido/tan-solo-el-03-por-ciento-de-todo-el-territorio-colombiano-corresponde-areas-urbanas-igac> [↑](#footnote-ref-18)
19. Agustín Codazzi Institute 2015 Report. [↑](#footnote-ref-19)
20. Agustín Codazzi Institute 2015 Report. [↑](#footnote-ref-20)
21. It is my understanding that there are not official statistics of the exact number of who could be considered owner, occupant and possessor. See the UN Refugee Agency Report at *Statistical Yearbooks. Figures at a Glance*. <https://www.unhcr.org/en-us/figures-at-a-glance.html> [↑](#footnote-ref-21)
22. For the specific procedure, see “ABC of *Ley de Víctimas y Restitución de Tierras”,* available at: https://www.restituciondetierras.gov.co/documents/10184/227457/ABC.pdf/96b6eb53-16c4-42bc-8a0f-8be383c05c58 [↑](#footnote-ref-22)
23. Article 84, *Ley de Víctimas y Restitución de Tierras* No. 1448 of 2011. [↑](#footnote-ref-23)
24. Article 72, *Ley de Víctimas y Restitución de Tierras.* [↑](#footnote-ref-24)
25. Article 72, *Ley de Víctimas y Restitución de Tierras.* [↑](#footnote-ref-25)
26. For instance, it could be considered means of proof: witness declarations, or expert opinions which might have associated costs. [↑](#footnote-ref-26)
27. The front man or *testaferro* in Spanish is the person who owns the property of goods on behalf of armed criminal groups, with the purpose of hiding the real owners of those assets. See a more detailed explanation in the Report of Human Rights Watch (2013), available at: <https://www.hrw.org/report/2013/09/17/risk-returning-home/violence-and-threats-against-displaced-people-reclaiming-land> [↑](#footnote-ref-27)
28. Report of Human Rights Watch (2013). [↑](#footnote-ref-28)
29. De Filippi and Wright, 2018, p. 74; Werbach and Cornell, 2017, p. 330; Surden, 2012, p. 639. [↑](#footnote-ref-29)
30. Werbach and Cornell, 2017. [↑](#footnote-ref-30)
31. De Fillipi, 2018. [↑](#footnote-ref-31)
32. The complete scheme of the HM Land Registry could be found at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/662811/HM_Land_Registry_Business_strategy_2017_to_2022.pdf>. [↑](#footnote-ref-32)
33. See *“Data quality”*, Business Strategy 2017 to 2022, HM Land Registry Report. Available at: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/662811/HM_Land_Registry_Business_strategy_2017_to_2022.pdf> [↑](#footnote-ref-33)
34. “A comprehensive land register, that is enabled and supported digitally and with high quality and comprehensive data, promises to be a significant tool to support economic and housing growth, innovation and the overall property market. It will mean that the ownership of all land will be transparent, helping to support development choices by making transfers simpler, faster and cheaper.” Business Strategy 2017 to 2022, HM Land Registry Report. [↑](#footnote-ref-34)
35. Business Strategy 2017 to 2022, HM Land Registry Report. [↑](#footnote-ref-35)
36. Schwartz and Thomas, 2018. [↑](#footnote-ref-36)