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'A promising playground': IDEMIA and the digital ID infrastructuring in Colombia

Joan Lopez-Solano [ID][a] and Juan Diego Castañeda[b]

aTilburg Institute for Law, Technology, and Society (TILT), Tilburg University, Tilburg, Netherlands;
bFundacion Karisma, Bogota, Colombia

ABSTRACT

This article explores how IDEMIA, a French security company, constructed an infrastructure for the identification and authentication services of the Colombian National Civic Registry (NCR) for more than 20 years of contractual relationships. The paper is divided into two sections. In the first part, we detail the history of infrastructure identification development by the NCR. The contracting model imposed a state action that allowed IDEMIA to grow together with NCR to create an infrastructure that ties all types of agencies and institutions as users of their technological solutions and services. By controlling the infrastructure and expanding its reach to other sectors, IDEMIA has been able to experiment with new technologies, such as a facial recognition engine and digital ID wallet, to generate new dependencies. In the second part, we expose three controversies in which the NCR has defended its exclusive competence against the National Police, the Government, and the private sector. Thus, it secured IDEMIA's position as a key provider of technological solutions for the NCR's public service. This case shows the commodification of legal identity, the entanglement of public and private interests that makes it hard to differentiate them, and the importance of historical analysis to explore the infrastructure power of technology companies.

1. Introduction

The Colombian National Civil Registry (NCR) has defended the legal identification of persons as an activity that falls within its exclusive competence from the interference of the private sector and other public agencies. Thus, the collection of identification data, production of credentials, and implementation of new technologies to identify and authenticate citizens in digital transactions are performed by a public authority. When a decree forced the NCR to open its databases and identification mechanisms and allow other public agencies to use them, the NCR's director challenged the law and reached an agreement with the relevant authorities to secure its exclusive

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competence. Similarly, when a draft Electoral Code was discussed, the private sector complained about provisions that established the NCR as the only authorized party to use identification data and biometrics (David Luna [@lunadavid], 2020). In parallel, the NCR has dedicated considerable resources to building the systems required to offer identification services to state agencies and private actors, which has contributed to its strengthening.

Technology companies that started by producing digital goods are now using their technical skills, such as data collection, analytics, and infrastructure development, to enter areas unrelated to their core business, such as health, medicine, and politics. Tamar Sharon (2020, 2021) calls this *Sphere Transgressions*. Although the NCR seems to be an example of a successful defense against the transgression of the private sector into public interest spheres, this study suggests that pressure from the private sector in the identification sphere has been resisted because of a previous form of privatization of the NCR. The multinational security company, IDEMIA, has been embedded in the NCR since the 2000s. This company has defined the Colombian national identification system as a *promising playground* to experiment with new technologies and *a root to go further* by expanding its infrastructure to other public and private services (IDEMIA, 2019).

The literature has focused on the novelty of this phenomenon, the clear-cut distinction between public and private actors, and has not considered the localized experiences of postcolonial countries that are striving to develop a domestic digital industry (Sharon, 2020, 2021; van Dijck et al., 2019; Zuboff, 2019). These theories have analyzed how Big Tech companies transform social interactions in different sectors to benefit them (Sharon, 2016; Zuboff, 2019). Recently, different authors have analyzed the concentration of power of these companies that use their digital expertise to move to other sectors fundamental for the provision of public services, introducing their logic and generating new dependencies (Lopez Solano et al., 2022; Sharon, 2020; van Dijck et al., 2019). However, other authors have suggested complementing this analysis with the historical perspective of infrastructural studies to explore how these platforms are taking the properties of infrastructures such as their relational quality, invisibility, and ability to determine what can be known and done (Plantin et al., 2018; Plantin & de Seta, 2019).

The development of NCR infrastructure questions how transgressions occur and what leads to 'easier' or 'harder' targets for technological and organizational changes. We explore how the development and legacy of an infrastructure shape and determine the possibility of transgressions. As we will explain, the NCR represents a case of both a categorical resistance to and an intense transgression of the private sector into the identification work defined as the exclusive competence of a state agency. While the NCR develops the infrastructure, it also welcomes a company to manage all its infrastructure and has defended its exclusivity from other actors.

The case of Colombia is not unique, as security companies have been growing because of the urgency of postcolonial governments to develop their information infrastructures. Technology companies have been known to use the postcolonial context as a testing ground for new products that would not be allowed in other markets (Arora, 2019).

In Chile, Indonesia, Botswana, Libya, Chad, Mali, Nigeria, Kenya, and the Ivory Coast, governments have created or modified current identity systems contracting with IDEMIA using its proprietary infrastructures, biometric systems, and centralized multipurpose technologies, allowing them to generate dependencies through public-private

partnerships that govern them (Burt, 2019; Debos, 2021; Macdonald, 2020; Mascellino, 2022; Mayhew, 2017a, 2017b, 2017c; Vrankulj, 2013). Furthermore, international development organizations like the World Bank actively promote identity systems by offering technical support, designing, and financing them (CHRGJ, 2022; World Bank, 2019). Meanwhile, conglomerates of companies play the sustainable development card to target postcolonial governments to develop identity systems that they could control.

This research investigates how IDEMIA, a French security company, has developed a privatized infrastructure for the identification and authentication services of the Colombian National Civic Registry. In this paper, we engage with the concept of *sphere transgressions* and *infrastructures* to question how and under what conditions certain forms of transgressions are possible. We suggest that if a line between the public and private sector can be drawn, IDEMIA crossed it in a slow but steady process, and both the company and the state agency secured an advantage due to their engagement.

In the first part, we detail the history of the development of identification infrastructures by the NCR. From the beginnings of the Colombian identification document to the latest projects by the NCR, we describe reasoning of the NCR during the consolidation of the identification infrastructure. During this process, IDEMIA set the stage for the NCR's expansion, which has its latest form in implementing an electronic identification document, and identification and authentication through facial recognition as a service. In the second part, we explain the most important controversies in which the NCR has defended its exclusive competence and, by doing so, secured IDEMIA's position as a key provider of technological solutions for the public service. Building on the previous two parts, in the last section we offer a discussion of the case and conclusions.

1.1. Materials and methods

The research methodology consisted of a qualitative research design that closely followed how transgressions were made and repelled in the NCR's identification sphere. The study used a critical discourse analysis of documents related to the contracts and companies involved in developing the NCR's infrastructure. The documents examined included legal and technical contracts, government reports, regulations, media articles, freedom of Information requests, and other relevant literature. These documents were collected from various sources, including government agencies, private companies, and academic institutions.

2. The development of NCR's infrastructure

The relationship between technologies and organizational change can be traced through the concept of infrastructure. It proposes to consider four elements: (1) the existence of decentralized technologies or networks that aim to function in different places and for different communities of practice, (2) the rigid aspect of a technology, that constrains organizations and forces them to adapt and change, such as the standards that are imposed to be part of the network, which determine and shape what can be known and done (Bowker et al., 2009, p. 98; Jensen & Winthereik, 2013), (3) the flexible aspect of this relationship, the ways in which organizations change the technology (Star & Ruhleder, 1996), and (4) infrastructures are relational, they are infrastructures of something, but they can cease to be so with respect to other assemblies (Slota & Bowker, 2016, p. 531).

As we explore the history of identification infrastructures in Colombia, we now pay attention to the strategies that the NCR has employed to construct and move its infrastructure through different contexts. This highlights the relational quality of the NCR's infrastructure. The NCR's identification services should serve an indeterminate number of transactions between citizens and private or public agencies to become that which is not considered when the need to identify or authenticate arises. To this end, the NCR developed identification services and relied without reserves on IDEMIA to extend its capacity.

2.1. The emergence of the ID card in Colombia

The ID card, also known as Cedula de Ciudadania, emerged in Colombia during the 1930s in response to political distrust in the elections. With escalating violence, the political elite attempted to establish voting cards as a technical means to restore political trust in the electoral system. Even though the original purpose of 1929 was to create a voter credential, further regulation was established to produce ID cards as a means to recognize who had access to the civil, social, and judicial systems (LEY 7 DE, 1934, 1934). The ID system started a function creep that transformed it into a way to produce state action by determining who was included (or excluded) as a citizen with duties and rights. Therefore, the ID card in Colombia firmly established itself as a vital tool for state action and civic purposes, as it became associated not only with elections but also with recognition of legal citizenship, which includes recognition in the judicial and welfare systems (Restrepo et al., 2013).

In the late twentieth century, Colombia adopted a neoliberal economic model, that emphasized the importance of the private sector, international commerce, and limited government intervention to the production of markets. The Colombian government rapidly liberalized its economy and public policy with the support of the World Bank and the IMF (López Restrepo, 1995). The World Bank advocated targeted resources, privatization of public services, and austerity measures in public spending (Hall, 2007; World Bank, 1990). This led to a significant shift in how the state defined and provided social rights to its citizens. This transformation required another type of abstraction of the legal identity for targeting social services. This identity represents an effort to simplify the complexity of the human experience to make the population legible (Scott, 1998). The simplification constructed by the NCR rendered the legal identity into a network of authentication infrastructures based on biometric recognition technologies.

Another two crucial regulatory changes open the possibility to the infrastructuring process of an international company inside the national identification system. First, the 1986 Electoral Code designated the NCR as responsible for designing and managing the ID card system, thereby enhancing the NCR's technical autonomy. Second, the 1991 Constitution allowed for private provision of public services, and contracting of services by public entities (Asamblea Nacional Constituyente, 1991, Articles 365 and 129, respectively). It also created the modern Colombian National Civil Registry (NCR) and established it as the entity in charge of 'the matters related to the identity of the people' (Asamblea Nacional Constituyente, 1991, Article 120).

The digitalization of Colombia's identity system started in 1994 with the implementation of the Technological Modernization Project (PMT) (Departamento Nacional de Planeación, 1994, 1995). The first phase was a request of national security agencies to

help in the identification of suspects in criminal procedures (Departamento Nacional de Planeación, 1995). The plan was to implement an Automated Fingerprint Identification System to serve as a service platform for third parties.

The NCR contracted the French defense company Safran Morpho, currently, IDE-MIA, to develop this new system. The first phase of modernization ended in 2005 with the digitization of the entire fingerprint system. In the second phase, between 2005 and 2010, the NCR completed the AFIS system with a web-based service to provide authentication services with fingerprints in the public and private sector (Martins, 2013). Liberalization of the Colombian state, the NCR's emergence as the identification authority, and the need for a new identification and authentication infrastructure for national security enabled Morpho, a strong company, to enter and consolidate within the national identity infrastructure.

The state digitization processes promoted by the development plans of recent governments have given NCR autonomy to define the requirements and mechanisms to provide these services. The agreements made with third parties for accessing databases may be contracts with private entities or agreements with public entities for consultation and validation of biographic information (Registraduría Nacional del Estado Civil, 2020d). The NCR receives a fee per query for biographic information and biometric queries according to the number of transactions performed by a private company (RESOLU-CIÓN, 5112 DE 2022, 2022). Through this process, any authorized external party that uses the standards determined by IDEMIA and pays the fee can verify that someone's fingerprints match the NCR's databases.

Since 2019, the National Civil Registry has signed more than 76 agreements and contracts for access to databases for biometric authentication and identification (Registraduría Nacional del Estado Civil, 2019). Currently, the actors that have access to the biometric authentication system include public and private actors in the financial sector, notaries, social security, public services, telecommunication, education, justice, healthcare, housing, technologies, and transportation (Registraduría Nacional del Estado Civil, 2019, 2020a, 2021).

Infrastructures are material manifestations of 'new notions of speed, light, power, and communications' (Graham & Marvin, 2001, p. 40). The emergence of the authentication infrastructure is the moment in which legal identity and its functionalities were transformed into a legible simplification that defines a commodity for/by the market (Taylor et al., 2022). This perspective has been promoted by international organizations such as the World Bank, which defined digital identification systems as enablers in developing various digital products and services (World Bank, 2016). In other words, the identification infrastructure is a foundational identity system, according to the Bank, that produces consumer and security practices (World Bank, 2019).

By controlling the systems of national authentication infrastructure, IDEMIA can secure more contracts with other public and private institutions to implement the systems to connect with the NCR and use its services. IDEMIA's systems have also expanded their reach to obtain contracts with other public institutions such as law enforcement, criminal investigation, issuance of driving licenses and its registry, and partially used technologies in notaries, flight passenger registries, and banks. The movement to expand its reach increases the network of actors involved with IDEMIA's systems and its presence in state functioning (Star, 1999; Star & Ruhleder, 1996). This gives IDEMIA

more control over the extent of what is possible for authorities to do and a privileged position in the market, as they provide and partially control an infrastructure that is essential for security and commercial practices.

In addition to acquiring IDEMIA's biometric identification authentication solutions, the NCR maintains contracts with IDEMIA to operate and maintain the infrastructure. These contracts ensure that the biometric identification authentication infrastructure remains functional and that ID cards can be produced. As Figure 1 shows, the funds to maintain and update the system in the contracts between IDEMIA and the NCR have been steadily increasing, particularly after the implementation of new technologies like the AFIS in 2012 and the facial recognition system in 2020.

2.2. Experimentation and the promising playground

The control of IDEMIA over the identity system, including the authentication, identification, management, and production of ID card infrastructure, allows them to redefine it as a testing ground. A clear example is the implementation of a new Mobile ID wallet that was not deployed in any country before (Idemia, 2019). The French multinational has defined Colombia's ID system as a *promising playground* for experimentation with other technologies, and it is an exemplary case for the advertisement of the ID way mobile wallet (IDEMIA, 2020).

The NCR and the Colombian government are not passive actors in the strategic movements of IDEMIA. The Colombifvan government has been pushing the idea of digital
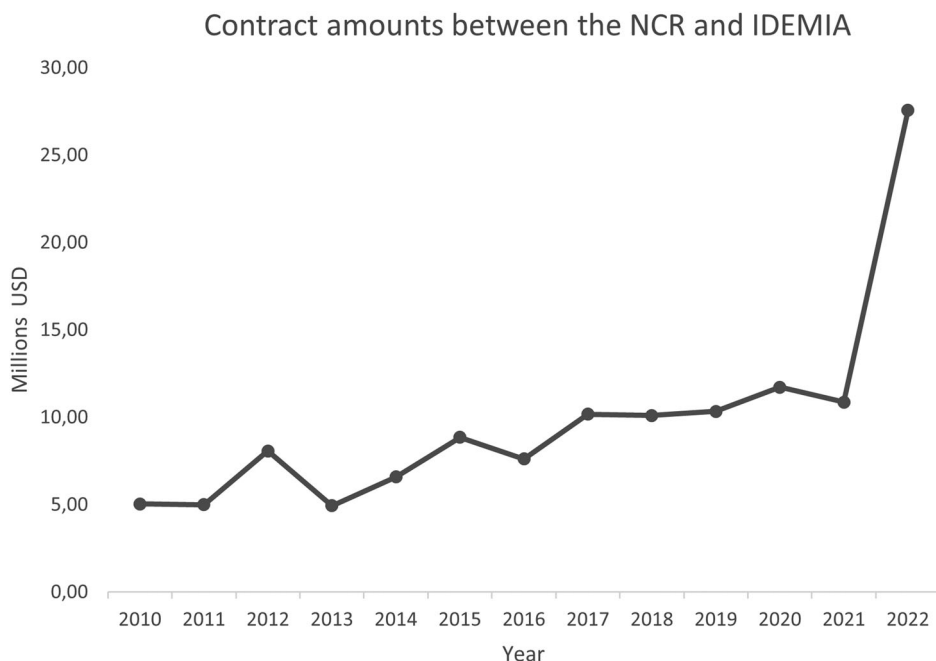
Figure 1. Amounts of contracts signed between the NCR and IDEMIA between 2010 and 2022 in USD. Source: Prepared by the authors based on data extracted from the Electronic System for Public Procurement (SECOP in Spanish) on the Contracts between the National Civic Registry and IDEMIA.

transformation as an objective, which involves expanding public data infrastructures for private value and creating a favorable environment for foreign investment from tech companies (Consejo Nacional de Política Económica, 2019; López Solano, 2019; Ministerio de las TIC, 2019a, 2019b, 2020). The NCR has used this narrative to justify its contract with IDEMIA for developing the ID wallet, claiming that facial authentication and mobile IDs are essential components for achieving the national goal of digital transformation and that IDEMIA is the only provider capable of fulfilling this need (El Espectador, 2020).

The NCR used the narrative of improving services and maintaining operations during the pandemic. According to the NCR, several organizations, including the public pension entity, the National Driving License Registry, the Notary Sector, and the financial sector, requested the opportunity to conduct pilot tests using facial recognition to develop alternative service delivery mechanisms that did not involve direct contact (Registraduría Nacional del Estado Civil, 2020b).

IDEMIA's control over the infrastructure also allows the NCR to procure technologies slowly and steadily under the financial constraints of the Colombian State. Since 2018, the NCR has introduced facial biometrics by integrating the Morpho Biometric Search Services engine, a proprietary IDEMIA technology, to perform facial identification, data extraction, and facial template creation (Registraduría Nacional del Estado Civil, 2018a, 2018b). Although the NCR had a facial recognition system, it did not yet have the computing capabilities to process all requests. Therefore, in 2019, the NCR increased its processing capacity and created a mobile application to test facial recognition (Registraduría Nacional del Estado Civil, 2019).

In the 2020′s Contract, the NCR asked IDEMIA to analyze the feasibility of implementing a digital ID (Registradufvría Nacional del Estado Civil, 2020a). During its execution, the NCR contracted again IDEMIA to create a national digital ID using the terms determined in the previous contract using a simplified selection, a public procurement mechanism that allowed the State to contract directly without opening a competitive process. With additional funds, IDEMIA was tasked with producing a new physical ID and a mobile ID version by repurposing the previous app and implementing a facial authentication platform for third parties (Registraduría Nacional del Estado Civil, 2020b, 2020c). In two months, the entire operation was ready to start producing the new document and operating the new functionalities of the Mobile ID wallet (Espectador, 2020; Infobae, 2020).

The facial recognition system is not something new that has emerged from nowhere, but rather a product of IDEMIA's infrastructure that constructed the facial authentication system on top of the fingerprint recognition system. Although the original design of the infrastructure shaped the implementation of facial authentication, the objective of IDEMIA with the new Mobile ID wallet is to construct a new infrastructure based on the mobile app (IDEMIA, 2020). In IDEMIA's (2020) words, the new Mobile ID Wallet is a *solid root to go further*. In other words, a mechanism to deploy an infrastructure that would allow them to authenticate and identify Colombians in any kind of digital service.

According to IDEMIA, the Mobile ID wallet is a new digital infrastructure that transforms a citizen's smartphone into a digital wallet, enabling them to manage their identity attributes directly from their device (Idemia, 2020). This system allows online

authentication for digital services via their own device selfie camera, but uses national identity databases. They promote this technology as the next step in authentication by allowing citizens to share selectively their attributes, and the local storage of other identity documents to ensure data privacy (IDEMIA, 2022, pp. 1–3).

The history of Colombia's ID document, the creation of a new authority tasked with everything related to citizens' identity, and its deep relationship with a private contractor show how one international company became so embedded in a public function. If a line between the public and private sectors can be drawn, this section accounts for how such a profound relationship came to be and how that line was crossed or ignored. Although the Constitution allows private parties to deliver public services under the control of specially designated agencies (Art. 365), the embeddedness of the private sector in Colombia's official identification and authentication systems did not occur through any formal delegation of the function (Bastidas Barcenas, 2014) but through a feedback loop in which the NCR strives to increase its reach in place in the State's systems. IDEMIA provides not only technical solutions but also expands the definition of what is possible for the NCR to do through their commercial offer. This mutually dependent relationship shields IDEMIA from external competition and gives the NCR the means to deliver its promises.

3. Controversies

This IDEMIA-NCR assemblage had to defend its exclusive competence over the identity of Colombian citizens on various occasions. Most of the work of maintaining the exclusivity of the NCR in the identification and authentication of citizens has been done against state agencies, not private companies. From a disaggregated view of the State (Gupta, 2012), we explore the outcomes of state activity by showing the friction between agendas, bureaus, levels, and spaces that make up the State as a complex array of institutions that have diverse specializations and modes of operation. The first controversy is related to the development of systems for facial recognition by the National Police. The second controversy placed the NCR against a number of different state and government agencies. The last one involved the stern opposition of the private sector to the expansion that the NCR wanted to perform over the authentication function. In all cases, the NCR asserted its constitutional function and interpreted that it was legitimized to provide an increasing list of services related to the identification and authentication of citizens.

3.1. The national police and its facial recognition system

In 2017, the National Police Fund initiated the acquisition, implementation, testing, and commission of a facial, palm, and fingerprint biometric system. This system would allow the Police to identify persons through images extracted from videos of security cameras (Policía Nacional de Colombia, 2017a). Another purpose was to connect the biometric recognition system to the MorphoRapID devices, manufactured by IDEMIA, bought in previous administrations. Although these devices allow facial identification features, the infrastructure was not in place for this function to be used when they were purchased (Castañeda et al., 2019; Policía Nacional de Colombia, 2017a). Similar to the AFIS system,

for the facial recognition system to work, it is necessary to have a database with facial templates against which to compare data collected through cameras, images, and videos.

During the execution of the contract, Tecnocom, the company selected by the Police, had difficulties migrating the existing databases to the new system. Therefore, Tecnocom had to subcontract IDEMIA to be in charge of the migration of the fingerprint databases (Resolución 00623 de 2017, 2017). This situation exposes how the infrastructure constructed by IDEMIA and the technologies sold to the Police locked in what was possible and how far they could be from the technology provided by the French company.

Likewise, the National Police bought a system from a Spanish company called Herta for database migration, generating a 3D model of faces from a database of photographs and for forensic analysis of videos to identify individuals (Policía Nacional de Colombia, 2017a). Tecnocom discovered that the lack of facial templates limited the possibilities of Herta's facial recognition engine. Therefore, the Police requested from the NCR a copy of the facial templates of persons with National IDs with judicial records in the Police Operating System. In 2019, the NCR denied the request because it would mean losing the tools to fulfill its civil identification function (Castañeda et al., 2019; Policía Nacional de Colombia, 2017b).

In 2021, the National Police confirmed to Fundacion Karisma in response to a FOIA request that the integration between the Police's new face recognition system and the biometric databases of the National Civic Registry was active (Dirección de Investigación Criminal e Interpol, 2021). In other words, the issue between the National Police and the NCR did not concern the legitimate use of the national identification infrastructure. Instead, it revolved around the conditions imposed on the technical and standard integration with the Police.

3.2. The digital citizen services and the ministry of ICT

The NCR has faced challenges to its authority over the identification of Colombians. The executive branch, led by the Ministry of ICTs, has developed an information infrastructure through laws, institutions, standards, and technological solutions to unify the state (Decreto 1151 de 2008, 2008) and eliminate information silos (Ministerio de las TIC, 2019a, 2019b). One of the latest developments in this effort is an interoperability service that aims to cover all state branches and independent agencies, including the NCR. According to the new law, the NCR is required to ensure that 'all authorities have access to technological solutions that enable citizen identification,' 'interoperability of its databases,' and 'access to identification mechanisms' (Decreto Ley 2106 de 2019, 2019).

According to the head of the NCR, the essence of the function of the entity is the exclusive control of the identification data. The director of the NCR explained that access to the institutional databases and the cross-check of data is the identification function itself, and it was assigned by the Constitution only to the NCR (Vega Rocha, 2020). This belief influenced the NCR's stance during the Mobile ID wallet procurement process in 2020. The NCR claimed its exclusivity and defended itself from the criticisms about the process and the timing of the digital ID platform implementation (El Espectador, 2020; Infobae, 2020; República, 2020).

The head of the NCR responses reveals the complex relationship with IDEMIA. Vega Rocha argued that the agency was not buying new software or materials for the ID, but

strengthening the current platform and defining IDEMIA as the only company with the knowledge to strengthen the technological platform (El Espectador, 2020). Furthermore, the Register recognized that it is impossible to disconnect the fingerprint recognition system from the facial infrastructure, and he even stated that:

> Creating a new system could be catastrophic and would put national security at risk. Identification is the most important asset of the National Civil Registry and we run the risk of losing 557 million fingerprints and 58 million photographs if the software is not compatible. *If the system is blocked for one day, entities such as the Prosecutor's Office, Police, or banks would stop operating. Everything that is touched has a butterfly effect and it would take 20 years to rebuild the database* (El Espectador, 2020)

In this context, it is clear how the director of the NCR opposed any attempts at transgression by other public agencies in the identification process. The movement of identification data beyond the NCR's infrastructure and without the agency authorizing access to it or certifying the results of operations resulted in a de facto function creep. As the introduction of a different set of technological solutions and new information infrastructure threatened organizational changes (Harvey et al., 2017; Jensen & Winthereik, 2013; Star & Ruhleder, 1996), the NCR emphasized its capacity to provide identification services to any public agency or private company that needed them.

The Constitutional Court decided in 2021 that the charges launched by the Registrar against Decree Law 2106 were not enough to decide that the decree law does not respect the principle of separation of powers and therefore, the situation remained as it was before the process was initiated. However, the NCR signed a memorandum of understanding with the Ministry of ICTs promising collaboration between the agencies and the respect of NCR's boundaries (Ministerio de las TIC & Registraduría Nacional del Estado Civil, 2020).

3.3. Against the private sector and the case of the electoral code

In 2020, the NCR and the President's office drafted a new Electoral Code to replace the current administrative order from 1986. Congress approved the first version but later the Constitutional Court declared it unconstitutional (Sentencia C- 133 de, 2022, 2022). The NCR resubmitted the proposal and, as of 2023, Congress is discussing it. The proposed Electoral Code has provisions that allow the NCR to exclude private parties from offering identification and authentication services (Proyecto de Ley Código Electoral Colombiano, 2020e).

One of the most discussed provisions in the draft reserved the authentication process as part of the exclusive competence of the NCR. The private sector strongly opposed the draft law. The first argument was that the NCR confuses identification with authentication because the competence given to the NCR by the Constitution only relates to the identification process (Cámara Colombiana de Comercio Electrónico [CCCE], 2021).

According to the National Association of Communications Companies, there could be several negative effects derived from prohibiting private parties to perform authentication services without NCR's intervention (Asociación Nacional de Empresas de Servicios Públicos y Comunicaciones, 2021). Moreover, the Banking and Financial Institutions Association stated that authentication is performed by private actors from different sectors to avoid, for example, obtaining mobile lines fraudulently (Asomóvil, 2021) or

financial crimes such as money laundering or fraud (Asociación Bancaria y de Entidades Financieras de Colombia [Asobancaria], 2021). Likewise, the Chamber of Electronic Commerce argued that it would also affect how some technology works because cell phones would not be able to use biometric authentication to unlock access to the device (CCCE, 2021)

However, the strongest argument presented by private associations is that the bill implied the creation of a monopoly by removing authentication from the free market (Asobancaria, 2021; CCCE, 2021; Cámara Colombia de Informática y Telecomunicaciones, 2021; Cámara de Comercio Colombo Americana [CCCA], 2021). According to them, recognizing that only the NCR can do authentication of individuals through biometrics is tantamount to expropriation and requires compensation for private sector investments in 'the development of biometric information systems' (CCCE, 2021, p. 8). In the digital and biometric authentication market, there is no constitutionally established monopoly (Asociación Nacional de Empresarios de Colombia, 2021). The private sector has invested substantially in authentication infrastructures to prevent fraud and to secure the provision of its services. The proposal is not only a barrier, but a total prohibition to entering this market, thus going against the freedom of enterprise (CCCA, 2021). Restricting the authentication market affects the right to equality as it favors the NCR over other players competing in that market (Asobancaria, 2021).

4. Discussion and conclusions

The IDEMIA-NCR dominance is based on the control over an infrastructure that is part of conventions of securitization and commercial practices. Colombia has a long history of biometric and identification systems for diverse purposes relying on international development partners and private companies. The model of contracting imposed a neoliberal perspective of state action that allowed IDEMIA to grow together with NCR to create an infrastructure that ties or tries to tie, all sorts of agencies and institutions as users of their technological solutions and services. By controlling the infrastructure and expanding its reach to other sectors, IDEMIA has been able to experiment with new technologies and generate new dependencies. They have taken advantage of the Colombian state's push for digital transformation to create market conditions that are favorable to their business. In this sense, IDEMIA is playing an active role in shaping the Colombian public sphere, particularly in the area of identification and authentication services.

Since the 1920s, identification processes have had the logic of rendering citizens visible to allow the functioning of the elections and the national security apparatus. As digitalization takes up many social transactions, the methods of identification and authentication work beyond the interface between citizens and bureaucrats in specific instances to expand to multiple digital interactions between public actors, companies, and individuals. Consequently, the NCR developed an infrastructure to mesh all instances of identification and authentication under its control as long as the companies working in that field allow them to expand. It is then the NCR that moves its constitutional and public function towards commodification and the creation of a market for identification and authentication services.

The literature on private and public relations in the digital technologies realm faces the challenge of accounting for a non-monolithic perspective of the state. As this case shows,

every state agency involved has its own agenda. The idea of the unity of the state must be produced at key controversial moments, such as the head of the NCR's lawsuit, but overall, the limits of each agency are shown through the development of the NCR's infrastructure.

Likewise, the analysis of the activities of tech companies in key public infrastructures is based on clear-cut boundaries between public and private actors. The case of IDEMIA and the NCR exposes a melting process in which it is not easy to differentiate between public (non-market) and private (market). It is almost impossible to isolate where the NCR starts and IDEMIA finishes.

For example, Sphere Transgressions define specific values on each sphere that allow for differentiation between legitimate and illegitimate expertise. The moment of transgression is when legitimate advantages of the technology space are used to advance to other spheres (Sharon, 2020, p. 54). However, IDEMIA is not *crowding out* expertise from outside the identity realm but *building up* the infrastructure that produces and shapes what is a legal identity and its possible uses. Therefore, the transgression occurs through the expansion of the infrastructure and shaping the relationships between citizens and multiple actors.

While the NCR invokes its exclusive competence grounded in the constitution, it opens public tender processes that formally allow different private providers to compete. IDEMIA then grows not in opposition, but in collaboration with a state agency, to the point where it is difficult to distinguish where IDEMIA begins and the NCR ends. Both leverage their advantages to succeed in or maintain their place in their respective contexts. NCR improves its services and is confident in its expansive ambitions owing to the support of IDEMIA. In turn, the company is shielded from market competition and secures a client willing to deepen its entanglement, as demonstrated by contract history.

A distinction between the NCR and IDEMIA can only be drawn when opposition arises between the two. In the draft law for the Electoral Code, the private sector, excluding IDEMIA, appeared as one before the Constitutional Court and explained the limits of the NCR as a public agency. They even threatened lawsuits to demand monetary compensation for the potential expropriation that the NCR's plans could imply. Similarly, IDEMIA and the NCR might be interested in mapping their limits when issues of sustainability or the legal certainty of their operations arise.

IDEMIA has played a pivotal role in the production, design, and execution of digital identification systems in Colombia. They actively experimented with technologies that would not be possible to test in other regulatory and infrastructural contexts because of strategic entanglement with the NCR. Moreover, they have extended their reach to new public actors and companies that want to develop digital services that already depend on civic identification, thereby creating new dependencies. Even though the ID card is consolidated as a *natural* authentication system in everyday life in Colombia, the struggle for digital identification and authentication continues. Therefore, IDEMIA and the NCR have tried to leverage their position to expand their reach from legal and security procedures about state-citizens relationships to the new commercial areas that emerged in the digital space.

Colombia's case is far from unique, but it exposes a paradigmatic example of the introduction of a company in a public function and the co-production of state action through the infrastructure controlled and produced by one international company. Colombia was

one of the first countries to adopt ID for civic identification. This does not mean an all-powerful State, but rather multiple actors that aim to create and make operable a State that had limitations to recognize/produce citizens. The historical push for the consolidation of identification systems has allowed IDEMIA to grow inside the already legitimatized paper-based identification used for legal and security purposes. The Colombian case is not a big and disruptive model to build a digital national ID system, as we have witnessed with systems such as Aadhaar in India, but rather a more subtle and slow project that has grown unnoticed, almost infrastructurally, within the history of identification practices and the institutional dreams of being modern and strong.

The expansion of companies into other spheres is not a new phenomenon. Building an infrastructure for authentication and identification services is a long-term process that involves digitizing identification archives and developing technologies to offer services to third parties. Given these (infra)structural conditions, it is not surprising that IDEMIA-NCR took advantage of the COVID crisis to experiment with an ID wallet, develop new infrastructure, expand to other sectors, and implement a facial recognition system. The study of the political economy of technology firms and the privatization of digital infrastructure should not buy the narrative of their novel and disruptive business models. Historicity exposes its limitations, understands how they are grabbing the public interest, and assists us in imagining alternative possibilities for deploying technology.

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Notes on contributors

Joan Lopez-Solano is a PhD researcher at the Tilburg Institute for Law, Technology, and Society. His research focus on the impacts of data-intensive systems on vulnerable communities used for social security, migration management, and identification systems [email: j.m.lopezsolano@tilburguniversity.edu].

Juan Diego Castañeda is the Director of Fundacion Karisma, a Colombian civil society organization working on social justice in digital technologies. His work focus on digital infrastructure in the public sector, identification systems, communications surveillance and internet regulation.

ORCID

Joan Lopez-Solano http://orcid.org/0000-0001-5068-7494

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