

Forging Global Institutional Homogeneity: Intellectual Property Evolution in Brazil's Software Industry

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This study analyses to what extent institutional entrepreneurship plays a role in the transformation of a formal institution such as intellectual property rights. We studied change in Brazilian intellectual property rights in the 1980's - 1990's. We did interviews and document research that were analysed on their content. The local institutional field, initially protected from external threats by a market reserve policy, legitimated practices that had been condemned in the global organizational field. We concluded that multiple and contradictory institutions favoured the emergence of the institutional change and agency of powerful actors at the centre of the global organizational field.

INTRODUCTION

This study contributes to the analysis of the mutual influence between organizations and institutions, placing special attention to the processes of institutional change in an organizational field. The purpose is to investigate to what extent institutional entrepreneurship plays a role in the transformation of a formal institution such as intellectual property rights. Based on the evidence of the change in intellectual property rights in Brazil in the 80's and 90's, this study intends to characterize some of the features of the actors influencing institutional change, while considering the following: (a) the conditions in an organizational field and (b) the position held by institutional entrepreneurs in an organizational field.

We consider the evolution of intellectual property rights in the software industry in Brazil as an exemplar case to offer insights on the interplay between public and private sectors and national and international actors in the establishment of the rules of the game in an industry. The Brazilian software industry is one of the largest in the world (ABES, 2013). This industry has experienced significant institutional changes since it came into existence as a separate sector. Entrepreneurs and leaders of industry associations recognize that changes in the law on intellectual property rights represented a significant institutional change that transformed the landscape of the industry. In the early 80's, there was no specific legislation on intellectual property for software production in Brazil. Furthermore, Brazil had adopted a policy at the time to protect the domestic IT industry, severely restricting production and commercialization of software by foreign companies. However, less than 20 years later, the country began to adopt legislation that ceased to give preferential treatment to domestic firms and that began to recognize intellectual property rights for software production.

We analyze the interplay between the features of the organizational field and the actions of the institutional entrepreneurs that had been either favoring or constraining changes in intellectual property rights.

We considered the organizational institutionalism approach with emphasis on studies on institutional entrepreneurship to analyze the processes of institutional change in the context of the software industry in Brazil. The perspective of institutional entrepreneurship explores the proactive role of individuals and organizations to create and transform institutions (Battilana et al., 2009; Colomy, 1998; Fligstein, 2001; Hardy & Maguire, 2008). The most vivid of these issues, which have been evolving in the last decades in studies about institutional change and institutional entrepreneurship, explores the conditions that allow certain organizations, individually or collectively, to shape the institutions based on their interests and needs. Nevertheless, studies on institutional entrepreneurship are not conclusive about who are, within an organizational field, the players most likely to promote institutional change. On the one hand, one of the requirements of the institutional entrepreneur is to have access to sufficient resources to enable the desired change (DiMaggio, 1988). Also, Colomy (1998) and Fligstein (2001) correlate the chance of success of a project of institutional change to the amount of resources available to its protagonists. Contrastingly, there are authors who see peripheral actors as the parties with a major interest in change because the institutional arrangements usually tend not to prioritize them (Greenwood & Suddaby, 2006; Hardy & Maguire, 2008; Leblebici et al., 1991). Thus, an issue of great importance is to conduct empirical studies to identify if there is indeed room for peripheral actors to succeed in institutional entrepreneurship actions (that lead to change). Based on the evidence of the change in intellectual property rights in Brazil in the 80's and 90's, this study intends to characterize some of the features of the actors influencing institutional change, considering the following: (a) the conditions in an organizational field and (b) the position held by institutional entrepreneurs in an organizational field (Hardy and Maguire, 2008).

In the next section, we present the approach of institutional entrepreneurship we adopted in this study and the categories applied to analyze the empirical evidence. We then describe the methodology used in this study and present the case of the evolution of intellectual property rights in the Brazilian software industry. The analysis emphasizes the characterization of the organizational field, its actors and their motivations and positions. Finally, we present the conclusions to this study.

PERSPECTIVES ON INSTITUTIONAL CHANGE AND INSTITUTIONAL ENTREPRENEURSHIP

To support the analysis of the mutual influence between organizations and institutions in the case of intellectual property evolution in software industry in Brazil, we assume a role for agency in institution structuration, and we highlight two aspects in the studies on institutional change and entrepreneurship: (a) the conditions of an organizational field and (b) the position held by institutional entrepreneurs in an organizational field (Hardy and Maguire, 2008).

Institutions are conceived of as a way of representing, reflecting, and enacting social reality that tend to gain stability from their own continuous reproduction in society, which promotes a view that institutions condition individuals. The structuration theory tries to offer a different perspective. Under this theory, on the one hand "the rules and resources outlined in the production and reproduction of social action are at the same time the means of system reproduction" (Giddens, 2009, p. 22). This structure is manifested in the form of habits and routines; institutions, therefore, are enabling or coercive because they can favor or constrain action. On the other hand, human action is not pure script execution: there is also room for strategic choices, so the agency ends up forming, along with the structure, a duality (Beckert, 1999). In accordance with the conception of Veblen (1899) on institutions, human action is at the same time constrained by institutions while also able to transform them. Consequently, routinized practices are not absolute, allowing some level of choice, which is the seed of its transformation. This perspective on the relationship between institutions and organizations relativizes the coercive power by institutions.

Aligned to the structuration theory view, institutionalism in organizational studies has been changing from a perspective that sought to explain convergence, conformity, stability, passivity, and homogeneity of actors to a perspective related to divergence, dissension, instability, proactivity and heterogeneity of actors (Levy & Scully, 2007). A growing number of scholars began to examine institutions and, even acknowledging its stabilizing trend, began to look for explanations for the process of creation, change or dissolution of institutions and, consequently, deserving some room for human and organizational action in the processes of institutional change (DiMaggio, 1988; Greenwood & Suddaby, 2006; Hardy & Maguire, 2008).

This new focus on the relationship between institutions, individuals, and organizations, which leaves room for notions of agency and interest, converged around the concept of "institutional entrepreneurship". This expression relates to the "activities of actors who have interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones" (Maguire, Hardy & Lawrence, 2004, p. 657). Originally conceived of by Eisenstadt (1964), the concept of "institutional entrepreneurship" reached resonance from a seminal paper of DiMaggio (1988) and proposes that research in the area should also pay attention to the processes of institution building and institutionalization. DiMaggio's (1988) statement that the creation of new institutions is costly and requires high levels of interests and resources has been supporting investigation about the creation of institutions. In parallel, research in the field of institutional entrepreneurship has been gradually contributing to the knowledge about institutional changes, not in the creation of something entirely new but in transforming what already exists.

Studies on institutional entrepreneurship analyze the apparent contradiction between institutions that influence individuals and the existence of individuals who, freed from this conditioning, visualize the possibility of transforming these institutions.

In the following paragraphs, we highlight some aspects related to institutional entrepreneurship opportunities that were insightful for analyzing the case of evolution in intellectual property in the Brazilian software industry. Nonetheless, studies on this field propose other aspects that are not mentioned here due to limitations in scope of this study.

Conditions of the Organizational Field

One aspect to be considered in examining processes of institutional change are conditions of the organizational field as they can be favorable or inhibit actions of institutional entrepreneurship. Institutional change motivations have been explained by future uncertainty that requires adaptation as well as by existing tensions and contradictions in highly institutionalized fields (Hardy and Maguire, 2008). Among the stimuli that promote institutional change is uncertainty or according to Pfeffer & Salancik (2003, p. 67) "the degree to which future states of the world cannot be accurately predicted or anticipated". If institutions, as stated by economists such as Veblen and Williamson, play the role of making the behavior of actors more predictable, then a scenario of uncertainty favors the adoption of an institutional solution that reduces the unpredictability that characterizes an organizational field at a given time.

Regarding the role of tensions and contradictions in the organizational field, it has been recognized that behind the apparent stability of organizational fields, of socially negotiated consensus, underlying differences can occur in mature fields (Greenwood, Suddaby and Hinings, 2002; Hardy and Maguire, 2008). (one sentence paragraph not ideal.)

Incompatibility between legitimacy and efficiency is one of the sources of contradiction (Seo and Creed, 2002) and has already been explored in seminal studies on organizational institutionalism (Meyer and Rowan 1977, DiMaggio, and Powell, 1983). Conformity with institutional arrangements may generate legitimacy at the cost of a level of inefficiency that leads certain actors to seek new arrangements more favorable to the sustainability of their organizations. The contradiction can also arise when adapting to institutional rules which place at risk the adaptive capacity of organizations. Blind acceptance to rules and norms may lead to, over time, the inability to perceive deficiencies in the present institutional arrangement, preventing actors from seeing better alternatives (Seo and Creed, 2002).

Another potential source of contradiction exists in the clash between compliance with an institutional arrangement at one level or sector with arrangements of other levels or sectors. An example cited by Seo and Creed (2002) related to the importance of the family in capitalist markets, which helps to reduce labor costs but, at the same time, is victim to harmful practices in that same market.

Additionally, contradiction can still originate from a conflict between isomorphic tendencies and divergent tendencies, which is related to the level of power of the different actors. Existing institutional arrangements tend to reflect the interests of actors with more political power, which hardly satisfies all actors in the organizational field, especially those less powerful (Seo and Creed, 2002). Thus, actors who are not being adequately served by the existing institutional arrangement would be those who, under certain circumstances, will become aware of the constraints imposed on them by the current institutional setting and become agents of change.

Position of Institutional Entrepreneurs in an Organizational Field

Another aspect considered when examining processes of institutional change is the positions held by institutional entrepreneurs. The concept of "position" is associated with the concept of organizational field. Organizational field is defined as "a community of organizations that partakes a common meaning system and whose participants interact more frequently and fatefully with one another than externally with actors outside the field" (Scott, 1995, p. 56). An organizational field may comprise companies, government, business associations, professional associations, interest groups and other stakeholders. More than just a group of influential organizations, the organizational field is a common space for dialogue and discussion around relevant issues for all its members (Hoffman, 1999). Within a field, there are a limited number of positions to be occupied, from which the actors can act (Hardy & Maguire, 2008). Power relations between the actors participating in an organizational field depend upon these positions, which are associated with diverse amounts of resources (including capital). Relationships and resources available to the actors of the field define their different interests and opportunities, and, depending on the circumstances, the possibility of exercising power over that field at a given time (Hardy & Maguire, 2008; Bourdieu, 1986). Per this vision, the power the actors may have is related to the positions they occupy in the organizational field and at a specific time. The concepts of center and periphery designating a hierarchy of positions have been employed in the institutional entrepreneurship approach. Greenwood and Suddaby (2006, p. 28) propose that these two notions include the ability of the central actors in a social structure to establish an institutional logic favorable to their interests as well as acceptance of this logic as defined by the different members of the organizational field.

One implication with the concepts of center and periphery to designate a hierarchy of positions is to investigate the correlation between position in an organizational field and protagonism in institutional entrepreneurship actions. A common-sense assumption is to expect that central actors would act to keep the institutional framework aligned to their interests. Nevertheless, studies on this subject show that both central and peripheral actors play impactful roles in institutional entrepreneurship. The explanations given to the initiatives of centrally-positioned actors refer to the interaction of these individuals or organizations with other institutional arrangements (e.g., multinationals that operate in different countries with different institutions). But there is evidence that peripheral actors can promote institutional change. Per Greenwood and Suddaby (2006) and Hardy & Maguire (2008), there is greater ease for peripheral actors to develop ideas for change because: (i) they would be less connected to other actors, and therefore less aware of institutional norms and practices; and (ii) they would be more exposed to alternative ideas by being positioned away from the center of the organizational field. The position of peripheral and unsuccessful actors in institutional entrepreneurship initiatives is also advocated by Seo and Creed (2002), but the authors themselves recognize that institutionalism has traditionally privileged the actions of actors who have access to more resources.

Table 1 summarizes elements about conditions of an organizational field and position of institutional entrepreneurs that will favor the analysis of the case of the evolution of intellectual property rights in the software industry in Brazil. In the next section, we present the method used to conduct the research.

TABLE 1
INSTITUTIONAL CHANGE: EXPLICATIVE ELEMENTS

	Explanation
Conditions of the organizational field	Uncertainty: <ul style="list-style-type: none"> - Institutional change can reduce the unpredictability of an organizational field. (Pfeffer & Salancik, 2003; Hardy and Maguire, 2008).
	Tensions and Contradictions: <ul style="list-style-type: none"> - Incompatibility between legitimacy and efficiency (Meyer and Rowan 1977, DiMaggio, and Powell, 1983). - Clash between institutional compliance and organizational level (Seo and Creed, 2002). - Conflict between isomorphic tendencies and divergent tendencies related to the level of power of the different actors (Seo and Creed, 2002).
Position of the actors in the organizational field	Center and Periphery: <ul style="list-style-type: none"> - The power the actors may have is related to the positions they occupy in organizational field and at a specific time (Hardy & Maguire, 2008; Bourdieu, 1986). - Center and periphery designate a hierarchy of positions of institutional actors on their condition of establishing an institutional logic favorable to their interests (Greenwood and Suddaby, 2006).

METHOD

This study adopts a qualitative research method, following a trend in studies in the organizational institutionalism field (Lawrence, 2008; Roberts, 2008; Pacheco et al., 2010). Qualitative research is appropriate to the purpose of this research, which aims to understand a process of institutional change, from inception to achievement. Thus, it is necessary to seek the origins of the change process and then track its deployment, while identifying actors, resources, motives and strategies. The analysis of data is interested in confronting evidence and interpretation to existing theoretical conceptions. We adopted a diachronic perspective to reconstruct the process historically, following a trend by most studies about the relationship between organizations and institutions (Pacheco et al., 2010; Rodrigues & Child, 2008).

The process of institutional change we analysed can be divided into two stages that are aligned with changes in the legislation on intellectual property rights in the software industry in Brazil. The different laws on intellectual property rights modified the "game rules" of the industry, favouring certain groups over others. We took these two stages as boundaries to describe the change process. We also followed the norm for the reconstruction of institutional entrepreneurship periods, considering basically two sources of data: documents and testimonies from actors in the process (Pacheco et al., 2010).

The research plan envisaged sources of primary data basically collected through interviews with relevant actors in the processes of institutional change, with balanced representation from the corporate sector, the four sectorial business associations that are involved in the Brazilian software industry and the Executive and the Legislature Powers. Thus, we conducted 16 semi-structured interviews, lasting an average of one hour, with company managers in the sector, leaders and former leaders of business associations and members of the Executive and Legislative Powers.

Investigations with a diachronic perspective often require the use of documentary research, especially when the study period is set in a past time that prevents or hinders the use of the interview or observation method. But even when it is possible to use the interview as a method, document research allows access to a range of additional information and serves the purpose of strengthening the validation of constructs

and test hypotheses through a triangulation of sources. Among the 146 analysed documents, whether in printed form or online, there were company and business association reports, legislation on the software industry and services, records of deliberations from the Congress sessions on changes in legislation, press articles, books, and articles on the subject, among other types and sources.

The transcribed interviews and documents were processed with the technique of content analysis, a process of categorizing qualitative textual data into clusters of similar entities or conceptual categories that "identify consistent patterns and relationships between variables and themes" (Julien 2008, p 120). We employed the software N-Vivo 10 as a tool to support this analysis process. Content analysis followed the basic steps suggested by Bardin (1977): pre-analysis, exploration of the material, treatment of the results and the interpretation. Content analysis of primary and secondary research data relating to the institutional change process studied in this article served two fundamental purposes. The first was to reconstruct, from different points of view, the chronology of events that have characterized the process. To meet this purpose, the data received a first encoding, indicating the time of each of the events considered relevant. The second purpose of the analysis was to understand who were the protagonists of each of the processes of institutional entrepreneurship, as well as their motivations and strategies.

THE CASE OF INTELLECTUAL PROPERTY IN THE SOFTWARE INDUSTRY IN BRAZIL

The institutional framework change related to software intellectual property rights in Brazil can be situated in the decades of the 80's and 90's from the last century. We identified a change process that can be separated in two different movements, both largely motivated by external pressures: the threat of trade retaliation by the United States in the 80's and incorporation of the matter of intellectual property in the GATT agreements in the 90's. Below, we present a chronological narrative that details the evolution of intellectual property rights regarding software production in Brazil. Then, we analyse the actions of institutional entrepreneurship considering their motivations and positions occupied by protagonists in the organizational field.

The First Movement: From the Threats of Trade Retaliation to the Software Law of 1987

In the 70's, in the period of military dictatorship (1964 to 1984), a vision of having an endogenous IT industry in the country oriented public policies: the military government adopted several measures restricting imports of IT products and fostered its production inside the country. Although the market protection policy had started in the 70's, it only began to be institutionalized in the 80's, with the creation of the Special Secretariat of Informatics (SEI), linked to the National Security Council, and the adoption of the Information Technology Law in 1984 (Schmitz, & Hewitt, 1992).

During the 70's and early 80's, the market protection for IT hardware and software was supported by the military, the scientific and technological community as well as by the recently established companies producing hardware (Bastos, 1994). However, with the end of the dictatorship, there was a conjunction of factors that destabilized the political alliance supporting the endogenous production and market protection policy. Internally, the military, by returning power to civilians, lost political power. Moreover, the economic crisis of the early 80's significantly reduced investments into research and development in computer science in the country, thereby reducing the importance and influence of the scientific and technological community engaged in the government policy for the sector. However, the national hardware industry and the nascent software industry as well as most members of Congress and the government kept their support for the policy of market protection.

Globally, the production of software was growing and increasingly representing a profitable business. The revenues from software, solely in the domestic U.S. market, jumped from 6.5 billion dollars in 1975 to 40.7 billion in 1985 (Steinmueller, 1996, p. 28). The rapid growth of demand and lack of legal protection for software developers, associated with the loss of competitiveness in the U.S. economy in the early 80's, are reasons which explain why large multinational companies, almost all with headquarters in the United States, had aimed to have free access to the Brazilian market. Additionally, there was the risk of Brazilian software industry's use of reverse engineering to produce similar software (Bastos, 1994;

Braithwaite & Drahos, 2000; Schmitz & Cassiolato, 1992). Indeed, the development of computer systems inspired on software from U.S. companies freely happened in Brazil in the 80's. For example, the Brazilian company Scopus commercialized SISNE, an operating system that was like MS-DOS, from Microsoft. In turn, the Brazilian company Cobra produced Sox, a Unix-based software.

In 1985, under pressure from companies like Microsoft and IBM, as well as business entities that supported the global movement to promote intellectual property rights, such as the International Intellectual Property Alliance (IIPA), the U.S. government announced the start of an investigation into the Brazilian informatics policy in accordance with section 301 of the U.S. Trade Act, which provides the possibility of applying trade sanctions in cases where the U.S. considers that a country's business practices to be harmful to American interests (Bastos, 1994). The measure had as its main target the Brazilian software industry, protected by the market reserve then in force. Between 1985 and 1988, several meetings were held between officials from Brazil and the U.S. to resolve the trade dispute. During this period, the U.S. government threatened to overtax Brazilian products exported to the United States, such as shoes and orange juice, with the purpose of persuading the Brazilian government to repeal legislation that, in their view, harmed the US software industry.

During that period, support for the market reserve started gaining opponents also within Brazil. Among them included other industrial sectors, which were in danger of suffering penalties for the protections continuity, but also other companies that claimed to be losing competitiveness because they could not buy foreign, cheaper and more efficient software (Schmitz & Hewitt, 1992). These national companies were added to the chorus of multinational subsidiaries from the software sector, such as Microsoft and IBM. The debt crisis experienced by Brazil also led to an internal division in the Brazilian government, with ministries such as that of Finance and Foreign Trade which had understood that the market reserve, at the time, harmed the negotiations between Brazil and the U.S. and with the International Monetary Fund (Bastos, 1994).

Amid the negotiations, the Brazilian government sent, in December 1986, a bill to Congress that included one of the main points of the demand by the U.S. government: The Law of Software, which proposed a system of protection for software intellectual property rights. The Brazilian Congress approved this law in June 1987 after discussions that showed a division between two representative business associations from the software sector in Brazil: The Association of Brazilian Information Technology Companies (ASSESPRO) and the Brazilian Software Firms Association (ABES). On the one hand, ASSESPRO, a business association that consists of national firms only, did not oppose the protection of intellectual property rights but expressed the wish that the law maintained a differentiated treatment for domestic firms. On the other hand, ABES, which had been created in 1985 and defended the interests of multinational companies, was in favour of the new law and argued that there should be no legal provisions that would prevent or hamper the commercialization of software from foreign companies in Brazil.

The final text of the Law 7.647/87 met only partially the interests of the U.S. and foreign companies. In compliance with the U.S. government's demand, software would have copyright protection for 25 years. However, other articles of the law were aligned with the market reserve policy. To have copyright protection, the software needed to be registered before at the SEI. Moreover, in relation to software from foreign companies, only those which were not similar to Brazilian ones could be registered. Finally, software sales, both domestic and foreign, could only be held by domestic firms.

As soon as the law was enacted in December 1987, the United States suspended the threat of economic sanctions against Brazil, but this did not close the case opened in 1985. New battles began to be fought, this time regarding the law's regulations, specifically on the criteria to be adopted as how to define whether the foreign software was similar to that of a Brazilian one. ASSESPRO, protecting the interests of domestic companies, defended the proposal to be consulted in the analysis of similarity (Bastos, 1994). However, organizations such as the ABES, the Sao Paulo's Industrial Federation Forum (FIESP) and the Brazilian Exporters Association proposed that to be considered similar the software should have 95% of similarity in performance criteria, quantitatively measured, to operate on the same types of equipment, instruments and peripherals, and to produce the same results in their core functions.

Most of the proposals that from the group of business associations formed by ABES and FIESP were accepted by the government and incorporated into the Decree 96.036/88. ASSESPRO condemned the government's decision, arguing that the criteria incorporated in the decree would damage the nascent domestic industry. Thus, commercialization was the only remaining aspect under market reserve with the new Software Law. Based on the decree regulating the Law of Software, SEI, denied in June 1987 the Microsoft's application for commercialization in Brazil MS-DOS system. However, this position was revised in January 1988, authorizing the commercialization of the 3.3 version of this operating system.

In February 1988, the U.S. government announced the suspension of retaliatory measures and, in the following year, closed investigations into Brazilian software trade practices. The influence by the United States government in this significant institutional change is acknowledged in several studies on the episode (Schmitz & Cassiolato, 1992; Bastos, 1994; Braithwaite & Drahos, 2000).

The second movement: from the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement to the Software Law of 1998

The notion of intellectual property exists, with different interpretations, since antiquity. However, it only began to appear in the regulation of international trade's spotlight starting in the 80's, when the trade of goods, factories and work began to be replaced by a knowledge economy, based on owner control of algorithms, genes, formulas and other abstract objects (Braithwaite & Drahos, 2000). The pressure exerted by U.S. companies and business associations was initially directed to the inclusion of the issue of intellectual property rights in the strategies of bilateral trade negotiations between the U.S. and its trading partners. And indeed, during the 80's and early 90's, the U.S. government opened investigations against several countries, accusing them of not respecting the intellectual property rights of major U.S. software companies, similar to the Brazilian case between 1985 and 1989. However, this strategy required a great deal of negotiation. The second stage was the creation of international standards to arrange intellectual property rights into international trade rules for all countries who participated in the GATT - General Agreement on Tariffs and Trade.

To ensure that the intellectual property rights of software would become law in all countries associated with the GATT, the first step undertaken by the United States government representatives was to convince its closest allies, in the European Union and Japan, which took place without major mishaps after a few rounds of negotiations, limited to those countries in the 80's (Braithwaite & Drahos, 2000). After writing a proposal that pleased these partners, it came time to propose The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) of the Uruguay Round of GATT. Reports of meetings that culminated in the adoption of the U.S. proposal indicate that the subject of intellectual property faced little resistance from developing countries. This low resistance has a few explanations. First, the United States, Europe and Japan presented the topic of intellectual property as a point that should necessarily be accepted; otherwise, the Uruguay Round of GATT would be concluded without an agreement. Moreover, the countries that opposed the proposal, such as Brazil and India, knew they would continue facing trade retaliation by the United States if they opposed the agreement. As the products protected by intellectual property rights used to not be the most relevant items traded by developing countries, and the acceptance of the proposed TRIPS Agreement opened the possibility of bargaining advantages over other items, such as agriculture or textiles, the U.S. proposal ended up becoming victorious. Thus, since the closure of the Uruguay Round in 1994, any country wishing to join the WTO would need to adapt their domestic legislation to ensure the intellectual property of products such as software and medicine, in compliance with the standard approved by the 111 countries that have signed the agreement.

The TRIPS Agreement deals with the applicability of basic GATT principles and international agreements on intellectual property, stipulates the rights of intellectual property deemed appropriate, determines measures considered effective to enforce those rights and predicts mechanisms for multilateral dispute settlement (Lampreia, 1995). Regarding software, the agreement determined that this should become protected in the same way as that of literary works, for a period of not less than 50 years, not allowing any form of preferential treatment for national nor foreign products.

The involvement by companies and business associations was decisive in the protection of intellectual property rights which were guaranteed in the GATT Agreements (Braithwaite & Drahos, 2000). In the early 80's, the direct participation by large companies was even greater. The advisory committee for United States government's trade policy had as its coordinator the CEO of Pfizer for a term. Companies like IBM and DuPont were also directly involved in the beginning of negotiations of the TRIPS Agreement, even in the 80's. In the software area, in addition to IBM, Apple, Microsoft and Lotus also actively participated (Braithwaite & Drahos, 2000). But gradually the direct participation of companies began to be replaced by business associations, representing the interests of U.S. multinationals and leading efforts to promote the globalization of intellectual property. Examples of such entities are the Intellectual Property Committee (IPC), the International Intellectual Property Alliance (IIPA) and the Business Software Alliance (BSA). Due to the technical nature of intellectual property, the analysis and lobbying used to end up under the responsibility of these associations (Braithwaite and Drahos, 2000). The IPC aggregated companies like DuPont, General Electric, General Motors, Hewlett-Packard, IBM, Monsanto, Pfizer, among other multinational corporations. The IIPA, in turn, brings together several business associations such as the American Film Marketing Association, Association of American Publishers and the Business Software Alliance, the latter including the leading software companies in the United States. The importance of the IPC is evident in the fact that it was this organization that drafted the document that served as a reference to the TRIPS Agreement. Moreover, this association and the others, at that time, maintained close relations with the U.S. government and Congress to shape the proposals and positions of that country during the negotiations of the TRIPS Agreement (Braithwaite & Drahos, 2000).

In Brazil, legislation on intellectual property rights of software needed to be adjusted to comply with the TRIPS Agreement, but first the GATT Final Act of the Uruguay Round needed to be ratified by the Brazilian Congress. The Brazilian government sent to Congress in June 1994, the Final Act of the Uruguay Round of Multilateral Trade Negotiations. In accelerated proceedings, the matter was discussed and approved by the Chamber of Deputies and the Senate in early December of that year, having been converted into legislative decree on December 16. The instrument of ratification was deposited in the GATT in Geneva on December 20.

In Congress, the then foreign minister, Celso Amorim, represented the government, highlighting the benefits of the agreement for Brazil, including the average reduction of import tariffs in developed countries, the elimination of non-tariff barriers such as import quotas, greater openness of international markets to the commercialization of agricultural products, as well as the possibility of future trade disputes be judged by the WTO, decreasing the possibility of unilateral retaliation without fair arbitration. Minister Celso Amorim, in a speech to Congress on December 7, 1994, stated that the postponement of the decision by Congress would not bring gains to the country, "partly because (...) you cannot change any of the terms of the agreement" (Brasil, 1994, p. 15018). Some congressmen deplored the restriction imposed on the Congress where it could not adopt a selective position, accepting some and rejecting another part of the agreement. The rapporteur of the message from the government to the Congress, Congressman Diogo Nomura, admitted that the GATT agreement was negotiated in a disadvantageous manner for developing countries, given the pressure from industrialized countries, but recommended its adoption, otherwise, Brazil would be "isolated in the international arena and subject to a discriminatory treatment" (Brazil, 1994, p. 15081).

The disadvantage of the GATT Uruguay Round Agreements was emphasized in the speech by deputy Haroldo Lima: "(...) the possible benefits that developing countries could reap in agreements on agricultural and textile sectors are annulled at the prospect of a monopoly by developed countries over knowledge" (Brasil, 1994, p. 15082). This congressman and other members pointed out what, in their view, was a contradiction of the GATT Uruguay Round: while agreements on material goods followed a liberalizing line, there was a hardening of commercial interactions for knowledge intensive goods, with a tendency to perpetuate a monopoly of developing countries over intangible assets.

The approval of the TRIPS Agreement required that Brazil adjust its legislation on intellectual property of software that had taken effect only seven years earlier. A few months later, precisely on

March 9, 1995, as a matter of urgency, the Brazilian executive sent to Congress a bill that aimed to upgrade the protection of the intellectual property rights for computer systems.

In the bill's justification and in the deliberations in Congress, there were concerns regarding the realignment of legislation on intellectual property right of software in the light of another institutional change with a much broader scope: the end of the market reserve for IT products that had lasted from the 70's to early 90's. By eliminating the barrier to the commercialization of software produced abroad, there would be no reason for the copyright protection differentiating computer systems based on their origin, as was the 1987 law in this specific area. Another important reason for the change was Brazil's adherence to TRIPS in the GATT Uruguay Round that, as stated in the explanatory memorandum of the bill, had delayed legislation on the subject then in existence. The rapporteur of the bill in the Committee on Constitution, Justice, and Citizenship (CCJ), Senator Lucio Alcantara, said, in relation to proposed amendments to the bill by the opposition, that they would be antagonistic "to the commitments assumed by the Brazil to the international community "(Agência Senado, 1998). Thus, the subscription of Brazil to GATT was presented as an argument that forced Brazil to adapt their domestic law to the parameters of a recently completed international trade agreement that had, as one of its main themes, the international standardization of intellectual property rights. Another argument concerned the high rates of software piracy, between 68 and 75%, according to different statements from congressmen at the time of the vote on the new law. The high rates of piracy led to two consequences, as suggest declarations presented in the explanatory memorandum of the project and discussions in the House of Representatives: 1) disincentive to conduct research and development by firms and 2) high tax evasion.

The main changes proposed in the new bill, compared to the 1987 law, are: a) The system of granting intellectual property rights for software became the same as the one granted to literary works, rising from 25 to 50 years; b) Software piracy started to be considered a crime of tax evasion, enabling the Federal Revenue Office to investigate companies and copies of software used in microcomputers; c) The penalties for those responsible for software piracy were increased; d) The obligation to register the software at Department of Information and Technology Policy of the Brazilian federal government (SEPIN) to obtain the license for the commercialization of software in the country has been eliminated; e) The restriction that only domestic companies could sell software in Brazil was eliminated.

The testimony of leaders and former business association leaders, as well as the documentary material examined indicate that among the existing sectorial business associations only ABES expressed formal support for the new law, even when it was still a project in Congress. ABES, established in 1986, presented itself as an alternative to ASSESPRO, which had existed since 1976 and had brought together only national software companies. ABES while representing national companies of different sizes, also welcomed multinational companies such as Adobe Systems, Microsoft, IBM, Dell, Corell, Intel and Symantec. Testimonials from directors of ABES and its documents list the 1998 Software Law as an achievement by the entity, but we did not find any documentary evidence to support that it had exercised significant influence over the government and Congress. At the level of companies, documentary data and interviews indicate that Microsoft had advocated for the law's approval, posting notes to support the change in legislation on their website (Microsoft, 1998).

In the discussions in Congress, as happened in the vote on the GATT Uruguay Round, there were expressions of concern about the consequences of the new law on domestic firms. In a session held on January 21, 1998, Senator Roberto Requião, the bill's rapporteur, said: "We will vote on the project, tied to Government's intention, that is subjected to the interests of some multinational groups. This is the Bill Gates' project, who does not respect the consumer (...)" (Brasil, 1998, p. 1176)

On the other hand, supporters of the proposal by the Government argued that imposing a term shorter than 50 years for the rights of intellectual property of software or imposing requirements for recognition of rights of foreign manufacturers would be in contradiction with the agreements of the GATT and the IT policy that the country had been using since the early 90's, after the end to market protection. They also argued that the rights granted would also benefit domestic software producers, stimulating the innovative capacity of Brazilian companies. Despite the proposed restrictions by the opposition, many against voted in favour of the bill, even though its amendments had been defeated. At a meeting on February 4, 1998,

the project that had been modified by the Senate passed the House of Representatives and was then sent to the Executive Branch, where it was sanctioned and became law on February 19 of that year.

Table 2 presents a framework that summarizes the evolution of intellectual property in the Brazilian software industry. In the next section, we discuss the changes in intellectual property.

TABLE 2
CHRONOLOGY OF THE PROCESS OF INSTITUTIONAL CHANGE IN SOFTWARE INTELLECTUAL PROPERTY

Month/Year	Event
September 1985	Initiation of investigations by the U.S. relating to the Brazilian market reserve for IT products.
1986	Establishment of the Intellectual Property Committee (IPC).
September 1986	Start of the Uruguay Round of GATT
September 1986	Creation of ABES - Brazilian Association of Software Companies
December 1986	Submission of the Proposal of Law of Software (Law No. 7.647/87) by the Executive to the Congress.
June 1987	Rejection by the SEI of the application for commercialization of MS-DOS system from Microsoft in Brazil.
November 1987	Announcement of U.S. trade retaliation against Brazil for disregard for intellectual property and protectionist policy in the IT field.
December 1987	Congressional approval of the Software Law (Law No. 7.647/87).
December 1987	Presidential assent to the Software Law (Law No. 7.647/87).
January 1988	Approval by the SEI of the application for commercialization of MS-DOS system, from Microsoft, in Brazil.
February 1988	Announcement of the suspension of U.S. trade retaliation against Brazil.
March 1988	Establishment of the Business Software Alliance (BSA).
May 1988	Publication of procedures for implementation of Law No. 7.647/87: Decree 96.036/88.
October 1989	Archiving of investigations by the United States relating to the Brazilian market reserve for IT products.
April 1994	Closure of the Uruguay Round of GATT containing the TRIPS Agreement.
July 1994	Submission by the Executive to the Congress of the Uruguay Round Final Act.
December 1994	Congressional approval of the Final Act of the Uruguay Round (Legislative Decree 449/94).
January 1995	Entry into force of the agreements of the Uruguay Round of GATT, including the TRIPS Agreement.
March 1995	Submission by the Executive to the Congress of the Bill 200/1995, that deals with intellectual property protection of computer programs.
February 1998	Approval of Software Law (Law No. 9.609/98) in Congress.
February 1998	Presidential assent to the Software Law (Law No. 9.609/98).

ANALYSIS

The changes in the Brazilian legislation regarding intellectual property of software can be considered as one project of an international program aimed at institutional homogenization. This understanding comes from an analysis of the case that considers essentially the motivating forces of institutional entrepreneurship, as well as the positions occupied by the main actors involved in the organizational fields.

Conditions of the Organizational Field: Uncertainty, Tensions, and Contradictions

The process of institutional change in intellectual property of software in Brazil describes an organizational field with global coverage and another field with national boundaries. Some actors correspond to both fields, but what happens in the global field severely restricts the possibilities of action by actors in the local arena. The relationship between the two fields was not stable throughout the process, evolving as the protagonists of the changes in the global field performed their project of institutional change.

The organizational field of global reach had as actors large U.S. companies that encountered obstacles to their growth because of non-recognition, in many countries, of the rights of intellectual property on products like software, pharmaceuticals and genetically-modified foods. These companies had sought support from the United States Trade Representative's office (USTR), the government agency in charge of U.S. foreign trade policy, and in the U.S. Congress. Initially, this support took the form of threats of trade retaliation in the bilateral relationships of the United States government with countries suspected of not securing the intellectual property rights on products from these companies or imposing restrictions on their entry into their domestic markets. As the disputes over intellectual property developed into tense bilateral relations, these companies sought support from the United States government to create and disseminate a global model for the protection of intellectual property rights that would favour their business interests, which had begun to be accomplished in the Uruguay Round of GATT in 1986. From that moment on, business associations, such as the International Intellectual Property Alliance (IIPA), the Intellectual Property Committee (IPC) and the Business Software Alliance (BSA), created respectively in 1984, 1986 and 1988, took the leadership (Siwek, 2013; Sell, 2003; Morris, 2001).

Thus, in this case a broader organizational field was composed of large companies operating globally and business associations focused on intellectual property, the U.S. Executive and Congress and the governments of countries threatened with commercial retaliation, as was the Brazilian case between 1985 and 1989. The field, which was already international, had now become truly global from the moment that the harmonization of intellectual property came into discussion in the GATT between 1986 and 1994. In this scenario, the IPC played a prominent role because this entity wrote the draft of the proposal that, with minor adjustments, took the form of the TRIPS Agreement. Government representatives from almost all of the world's countries participated in the discussions on this topic over eight years between the first and last meeting of the Uruguay Round of GATT. During the discussions, these countries were divided into blocks, with the U.S. taking Europe, Canada and Japan as allies and finding limited resistance from developing countries like Brazil and India. Once signed the Agreement on Trade Related Aspects of Intellectual Property Rights, in 1994, and guaranteed the institutional harmonization on a global level, the organizational field persisted with the same actors, but with a lower activity level as the large project, initiated about a decade earlier, had already been achieved (Drahos, 2004).

While the actors were acting in a broader organizational field, their performances impacted on the actions that had been taking place in a parallel organizational field with more narrow boundaries represented by the nascent industry of software and services in Brazil. In this smaller organizational field, there was the participation of local and mostly small companies. Initially, the protection of their interests was assumed by ASSESPRO. With the entry of foreign companies in the Brazilian market, conditions of this organizational field changed, and conflict emerged between isomorphic tendencies and divergent tendencies related to the level of power of the different actors (Seo and Creed, 2002). ABES, an association competing with ASSESPRO, was created to reinforce multinational companies' interest in the country. Moreover, Brazilian government policies were changing and favoured compliance with multinational companies' interests, giving room for a renewed position regarding the former market reserve practised in the military regime in the decade of the 70's and 80's in the last century.

Non-sectorial national business associations, such as FIESP, reinforced the position of compliance with multinational companies' interests to avoid trade retaliation in other sectors and to decrease the higher costs of computer inputs. The Congress took part in the organizational field during the discussions on drafting a law that would modify the rules relating to intellectual property. From the moment that Brazil signed the Act of the Uruguay Round of GATT, the national actors who wished to maintain an

institutional framework for the protection of the domestic software industry became powerless against the major change consummated globally and its power to restrict the policy decisions of each country.

We consider that from the standpoint of U.S. companies' heterogeneous organizational fields represented uncertainty as the existence of different rules per country was enabling practices such as reverse engineering to produce competing software in addition to the problem of software piracy. To avoid uncertainty, the project of institutional change at the global level replaced the heterogeneity with institutional homogeneity. This institutional heterogeneity was a motivating power of entrepreneurial effort, motivating the central actors in the organizational field to impose their preferred model upon other actors. Thus, in the global dimension of this project of institutional change, there is support for the thesis that there is a tendency that heterogeneous organizational fields are more prone to episodes of institutional entrepreneurship (Hardy & Maguire, 2008; Seo & Creed, 2002). On the local level, institutions were pieces of a multi-coloured mosaic when one considers the planetary map of institutions working with intellectual property of software that prevailed in the 80's and early 90's. Finally, the main motivation for the creation of the first and second Law of Software in Brazil was not local but external.

Position of the Actors in the Organizational Field

Hardy and Maguire (2008) state that actors have no power, but they can occupy powerful positions in the organizational field, justifying the examination of the positions occupied by the main actors in the double organizational field which took place during the process of institutional change regarding the intellectual property of software in Brazil. According to Greenwood and Suddaby (2006), the notions of centre and periphery cover the ability of the central actors in a social structure to establish an institutional logic favourable to their interests as well as the acceptance of this logic as given by the different members of the organizational field. The position of centrality is associated with the control over resources, not necessarily financial. The legitimacy and ability to influence other individuals or organizations are resources that may be relevant too (Hardy and Maguire, 2008).

In the case of intellectual property rights, one can recognize a gradual occupation of centrality by large companies in the organizational field with global coverage. In this organizational field, multinational companies as Monsanto, DuPont, Novartis, General Electric, General Motors, Hewlett-Packard, IBM, Johnson & Johnson, Merck, Warner Communications, Apple and Microsoft had been interested in organizing a global standardization project of intellectual property for quite some time. In this case, centrality and economic power are associated.

Thus, an analysis of the position of the protagonists of institutional change in relation to its organizational field reveals that central actors act as institutional entrepreneurs, as proposed Fligstein (2001). Large multinational companies in the software sector, allied with the United States government, occupy a central position in the field, while the developing countries and their companies occupy a peripheral position.

In the organizational field with national boundaries, intuitional entrepreneurs' positions had not remained so stable throughout the process. During the market reserve period, national IT companies and the government kept the organizational field relatively homogeneous and protected from external movements. However, given external pressures (e.g. U.S. government and multinational companies), the local organizational field and its actors were gradually integrated into the organizational field with a global reach. The Brazilian government support for national companies became increasingly less relevant when the national organizational field blurred to a broader one with global reach. This transformation in the local scenario becomes evident when the strong resistance to the first Law of Software in 1987 is compared to the tenuous resistance to the second Law in 1998. Eleven years after the decline of market reserve policy later, the population of Brazilian IT industry companies was made up of numerous national small software and a set of multinational companies. Nevertheless, the latter occupied a central and powerful position regarding influence on the government to have the country aligned with international standards of intellectual property rights. In 1987, the large trade association from the software sector in Brazil was ASSESPRO, but in 1998 ABES occupied a central position representing the software sector with the support of large foreign companies such as Microsoft and IBM.

CONCLUSION

The purpose was to investigate to what extent institutional entrepreneurship plays a role upon the change of a formal institution such as intellectual property rights. We considered the evolution of intellectual property rights in the software industry in Brazil as an exemplar case to offer insights on the interplay between public and private sectors and national and international actors in the establishment of the rules of the game in an industry. We focused on the characterization of the actors influencing institutional change, considering the following: (a) the conditions in an organizational field and (b) the position held by institutional entrepreneurs in an organizational field.

The analysis included the identification of the motivations of the process of institutional entrepreneurship, as well as the evaluation of the possible relationship between the positions of the protagonists of process of change compared to the other actors in the same organizational field. The theoretical support for this study was taken mainly from organizational institutionalism, backed by contributions from institutional economics. Studies on institutions have gradually abandoned a deterministic and unidirectional conception of its relationship with individuals and organizations, especially in light of the theoretical and empirical contributions that come from research on the institutional entrepreneurship. The results of this investigation align with this new perspective, revealing that, in addition to the great power that institutions have over the organizations, these also have, under certain circumstances, power to shape their institutional environment according to their own interests.

Indeed, examination of the history of the software and services industry in Brazil over a period of about 20 years has shown that institutions have shaped the industry and influenced the survival of certain organizations and the extinction of others. But it also showed that, acting collectively, organizations can promote changes in institutions, getting rid of the condition of being inert victims of their environment, a finding similar to what had been observed in other studies on the subject (Battilana et al., 2009; DiMaggio 1988; Flier, Bosch & Volberda, 2003; Fligstein, 1996; Rodrigues & Child, 2008).

The examination of the process of institutional change on intellectual property of software revealed a complex interaction between two organizational fields, one local and another global. Initially protected from external threats, the local organizational field had a set of institutions that legitimated practices such as software reverse engineering, which had been condemned in the global organizational field. The local organizational field began to erode in the face of increasing pressure from external actors, in the global field, which had much more power, exerting threats of trade retaliation, and including intellectual property as a commercial agreement of GATT.

The analysis of the characteristics of the organizational fields involved in this process of institutional change shows the existence of multiple and contradictory institutions as has been pointed out, in the literature on institutional entrepreneurship, as a feature of the organizational fields that is favourable to the emergence of projects of institutional change (Hoffman, 1999; Beckert, 1999; Seo & Creed, 2002). Contradiction motivated the central actors in the organizational field to impose their preferred model to other actors. In the context of intellectual property, institutional diversity was an obstacle to the project of creation of a global market dominated by the largest companies, which motivated them to organize a project of institutional homogenization.

In this process of institutional change, we have also identified that institutional change was not conceived in the periphery but at the centre of global organizational field by the more powerful actors and that, after the consummation of the change, reached an even more dominant position. This finding is consistent with the results of other studies that identify the actors with more resources as the protagonists of processes of institutional entrepreneurship (Fligstein, 2001; Rao et al., 2003; Greenwood & Suddaby, 2006). This, however, is a matter of debate within the organizational institutionalism as there are studies that show institutional entrepreneurship projects can be led by peripheral actors, who would have the motivation to make changes, given the trend that the existing institutional arrangements do not necessarily meet the needs of these actors (Leblebici et al., 1991; Greenwood & Suddaby, 2006; Hardy & Maguire, 2008). It must however be remembered that the desired institutional change involved, in the case study, a change in legislation and had to have government support to be implemented. One possible explanation

for the fact that the protagonists were powerful actors is linked to the need to mobilize large amounts of resources to support business associations and fund studies aiming to provide technical support to a political demand. Studies on institutional entrepreneurship can explore, in other contexts, the conditions that are necessary for less powerful actors to become protagonists in episodes of institutional entrepreneurship.

The findings and conclusions presented here should be considered taking into account the limitations of this research. First, the study considers an institutional change in a developing economy. The dynamics of the relationship between organizations and institutions may have significant differences in other contexts. Furthermore, we followed the bias of success, present in almost all the studies on institutional entrepreneurship, that exploit successful cases of institutional change, ignoring the empirical and theoretical richness that can come from the study of experiences that resulted in failure.

The obtained results suggest opportunities for further investigation. The intellectual property laws on the software adopted in Brazil in 1987 and 1998 appeared as processes of institutional change largely determined by an institutional project on a global scale. If it is true that the inclusion of intellectual property rules in the GATT agreements led to an institutional homogenization, then we should find, in other countries, and in the same period, parallel movements to the Brazilian one. A study comparing the evolution of the intellectual property laws of the software in different countries may reveal the similarities and peculiarities of the adaptations of each country in the face of the strength of this process of institutional harmonization. Furthermore, studies comparing the positions of institutional entrepreneurs compared to the other actors in their organizational fields in change processes of formal and informal institutions can help clarify whether there is an association between the type of institution to be transformed and the amount of resources required for the entrepreneurial effort to be successful.

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