Institutional entrepreneurs: An evolutionary approach

Cabero Tapia, Shirley Patricia
Universidad Catolica Boliviana San Pablo, Bolivia

Abstract

This paper suggests that institutional entrepreneurs -acting in small groups- follow an evolutionary approach characterized by interactive learning, interactions with other actors and the leadership of promoters. These micro-trajectories are explored on the institutional endeavors of two groups that are fostering the diffusion of Information and Communication Technologies (ICTs) in Bolivia. The evidence of this paper provides new insights of the distributed view of agency and shed lights on how actors can influence the social system. This is relevant at a time characterized by the Anthropocene.

Key Words

1. Introduction

Technological advance and innovation have been acknowledged as a key driver for economic progress. The articles of Nelson & Winter (1974) and Freeman (1974) brought an impulse to the evolutionary economics stream and to the innovation studies. From there, several studies and frameworks have been developed with the aim to understand the mechanisms that govern the development of innovations and technologies, and thus their contribution to economic development. Likewise, it has been explored causes related with the economic development of some nations and the stagnation of others, and thus, causes of inequality have been analyzed as well. Among these contributions stand out the long waves theories (Freeman, 1984; Perez, 2004), technological learning (Linsu, 1980; Lall, 1992; Johnson, 2011) and development of technological capabilities (Fagerberg et al, 2007; Figueiredo, 2002), and the national innovation systems (Lundvall, 1992; Fagerberg & Srholec, 2008).

At the same time, several scholars have been recognized that the adoption and diffusion of technologies is conditioned by the speed related institutions are able to change and to adapt (Dosi, 1988; Freeman & Perez, 1988; Nelson, 2001). Nelson (2008) lays out that the definition of institutions itself is problematic and in order to move forward it is necessary to solve this issue. Thus, he proposes the concept of social technologies and he states that “innovation driven economic growth needs to be understood as involving the co-evolution of physical and social technologies, and that the dynamics of institutional change should be seen in this light” (Nelson, 2008:4). However, to get a consensus among different theoretical streams about the notion of social technologies and their theoretical contribution represents a challenge.

On the other hand, Gregersen et al (2004) propose how different types of institutions may influence learning and innovation capabilities in relation to sustainable development, including. A related challenge lays in the difficulty to generalize types of institutions for a diversity of national, regional or local contexts. In addition, the Globalization has not only accelerated the technological development, but also has been introduced profound changes at all levels. Sustainable development and social inclusion pass through the resolution of the increasing grand challenges defined by the concept of the ‘Anthropocene’ (Jhonson et al. 2017).

Within this context, the notion of institutional learning introduced by Lundvall & Jhonson (1994) sheds light and it resonates with the argument of Perez (2004) to promote institutional innovations. Therefore, the proposal of this paper is: departing from the theoretical advances from the institutional theory, propose to follow an evolutionary approach –characterized by interactive learning personal networking and the role of key promoters- to analyze: how actors might be able to influence effectively in the change of extant institutions?
In this sense, section two of this paper introduces on the notion of institutional entrepreneur and the advances related with the paradox of agency. To answer the research question, section three present the evidence of two initiatives from the civil initiatives, that are promoting institutional change to foster the diffusion of Information and Communication Technologies (ICTs) in Bolivia. So far, these institutional ventures resulted in changes of the regulatory framework to support the broad adoption of Software Livre (SL) in the government, and the establishment of programming contests at universities and schools. To highlight the heterogeneous context where these groups are promoting institutional change, the article examines the micro-processes of the institutional initiatives: learning strategies, the internal organization and the networks of the institutional entrepreneurs. The contribution of the paper and the future research implications are discussed in section fourth.

2. Institutional Analyses and Institutional Entrepreneurship

Although there is not a consensus about the definition of institutions, they can be broadly defined as social rules –formal (like laws) and informal (like cultural practices)- that shape knowledge, action and interaction among actors in the society (Hayek 1973:33ff.). It is recognized that:

- Institutions are not immutable, they change over the time (Dimaggio & Powell, 1991; Aoki, 2000).
- This change is gradual, complex and incremental (Mahoney & Thelen, 2010:1-2).
- This change is produced by both exogens factors and endogens factors (Greif & Laitin, 2004:633-634).

By accepting that endogens factors influence the change of institutions, the notion of institutional entrepreneurs emerges in the institutional analysis, with the aim to explain how actors could contribute to the transformation of existing institutions or to the creation of new institutions. (Eisenstadt, 1980; DiMaggio,1988). In this way, institutional entrepreneurship challenges the propositions related with isomorphic processes that are governed by institutional forces and the resilience of institutional prescriptions (DiMaggio, Powell, 1983). Therefore, institutional entrepreneurship introduces agency in institutional analysis and explores the underlying mechanisms around the ‘‘paradox of embedded agency’’. This paradox is referred into what extend actors could enact changes to the context by which they, as actors, are shaped. Institutional entrepreneurs foster non-isomorphic processes of institutional change (Greenwood et al. 2002).

Following the narrow sense of the “entrepreneur” notion, early studies of institutional entrepreneurship focused on the actions of a single actor. However, later studies suggest a possible collective dimension of institutional entrepreneurship (Rao et al., 2000; Lounsbury & Crumley, 2007; Canales, 2011). This work conceptualizes the commitment of several actors with access to varying
sorts and levels of resources. Therefore, institutional change might be caused by both the planned and non-intended actions of actors who break with institutionalized practices (Battilana et. al., 2009). Institutional work -proposed by Lawrence & Suddaby (2006)- seeks to find a balance between the narrow sense of the socially skilled “solo entrepreneur” and the notion of the institutions as lasting structures that cannot be transformed by actors. This provides a distributed and nuanced view of agency. Following this logic, Dorado (2013) suggests the adoption of the small group as the unit of analysis for institutional entrepreneurship.

Regarding the determinants of institutional entrepreneurship, agency may be possible for field-level conditions, including environmental jolts such as technological, social, regulatory changes (Oliver, 1992; Greenwood et al, 2002); the level of heterogeneity of practices and norms within the field (Seo & Creed, 2002); the existence of competing logics, (Thornton et al, 2012); and the magnitude to which these practices and norms are institutionalised (Dorado, 2005). On the other hand, actor’s social position is considered a determinant for institutional entrepreneurship at individual level because social position might influence both actors’ perception of the field (Battilana, 2006; Dorado 2005) and their access to the resources needed (Lawrence 1999).

Once institutional entrepreneurs decide to pursue reforms in existing frameworks, a non-isomorphic institutional change process start. Greenwood et al. (2002) identify in the literature six stages of non-isomorphic institutional change in organizational fields: (1) Precipitating jolts: when taken-for-granted practices are destabilized; (2) De-institutionalization: with the emergence of institutional entrepreneurs, who introduce new ideas that challenge the status quo; (3) Pre-institutionalization: in which organizations experiment with new alternative practices; (4) Theorization: in which the specification of a problem and the justification of a plausible solution are developed; (5) Diffusion: new practices are widely adopted on the basis of increasing objectification and legitimacy. (6) Re-institutionalization: new arrangement become taken-for-granted.

Along this process, uncertainty levels vary. De-institutionalization introduces uncertainty in the field because tensions and conflicts emerge with entities that put up resistance to the new practices. According to Hargrave & Van de Ven (2006: 878): “Conflict is the core generating mechanism of [institutional] change, power is a necessary condition for the expression of conflict, and political strategies and tactics are the means by which parties engage in conflict”, therefore uncertainty is mediated by conflict, power relations and conflicts in this stage. As long as the process moves forward, even in cases when new practices fail in their diffusion, uncertainty decreases; and once stability is re-established, entrepreneurial ventures can start again (Beckert, 1999). Nonetheless, the stages of the institutional change process are not the only factor which influences uncertainty levels. Broader socio-economic processes (Delbridge & Edwards, 2008), exogenous shocks (Ruttan, 2003),
tensions in legitimization processes (Suchman, 1995; Garud, 2002) are some factors that can have an impact in uncertainty levels as well.

Regarding the mechanisms adopted by institutional entrepreneurs to pursue their endeavors and manage uncertainty, research shows that institutional entrepreneurs exert to appropriate framing (Rao, 1998), and discursive strategies (Battilana, 2006; Garud et al., 2007; Maguire et al., 2004; McGaughey, 2013) Likewise, institutional entrepreneurs should mobilize resources, apart from financial assets (Greenwood et al., 2002), their status (Sherer and Lee, 2002), and social capital play (Battilana, 2006) a role.

In sum, research on institutional entrepreneurship has significantly enhanced our understanding of the determinants of institutional entrepreneurship (i.e why agency is enabled) and of the mechanisms used by these actors (i.e. how agency is carried on). In this paper, my approach is to advance our understanding of institutional change pursued by agency as a process intrinsically evolutionary, where experimental learning is at the core, and where micro-level trajectories allows changes at meso-levels and macro-level.

3. Evolutionary approach to study institutional entrepreneurs acting in groups in Bolivia

To answer the question: how actors might be able to influence effectively in the change of extant institutions? A study about two groups from the civil society that are promoting the diffusion of ICTs in Bolivia has been performed between 2014 and 2015. The study has been focused in three aspects that are shaped by the evolutionary nature of institutional change:

- The learning dynamics of institutional entrepreneurs.
- The personal contacts used to move forward institutional ventures.
- The role played by promoters or champions inside the groups.

Next, I introduce the context and the research methods of this study.

3.1 The research setting

With the arrival to Evo Morales to the presidency in 2006, profound changes at political, economical y social spheres have been started in Bolivia. The new government enjoyed a wide majority in the parliament, which allowed it to start larger reform processes, including the new political state constitution (CPE) - approved in 2008 by the Congress of the Nation-, the nationalization of key industries reaching 19 firms by 2014: (including firms in the hydrocarbons, mining telecommunication
and electricity sectors) (Peña, 2015) and in 2012 the definition of a long-term national agenda for development in Bolivia towards 2025 so-called “The Patriotic Agenda: Bolivia towards 2025.”.

But Bolivia has been struggling with how to exploit ICTs for broader benefit to the country’s population. For various economic and infrastructure reasons, mobile telephone technologies have deployed rapidly, however, the use of computers lags behind many developed countries and several South American countries as it does in Bolivia (Guzman & Kaarst-Brown, 2012). In this scenario, several initiatives from the civil society have emerged with the aim to exploit ICTS. This section summarizes the efforts of two initiatives that are fostering domestic institutional reform, in order to promote a broader adoption of these technologies, and the development of related technical skills.

The first case is the SIM group1. This group fosters the development of world-class skills in computer sciences and programming for students in Bolivia. This group started in 2006 under the coordination of the Association for Computer Machinery's International Collegiate Programming Contest (ACM-ICPC) in Bolivia. About 1500 students from seventeen Bolivian universities participated in this program in 2015. Likewise, together with the Bolivian Ministry of Education, the SIM group has organized since 2012 the Bolivian Olympic School of Informatics, where every year roughly 10,000 students compete at the national level. In terms of micro-institutional change, schools, universities, firms and state bodies have adopted the SIM contests as part of their own activities. This, in turn, implies that they have adapted their institutions to support the development of world-class skills in computer sciences.

The second case is about the Software Livre (SL) groups, that have promoted the use of Software Libre (SL) throughout the Bolivian state. As a result of the actions of the SL groups, article 77 was included in the new Bolivian Telecommunications Law No. 164. The immediate consequence of this article is the total migration to SL by all Bolivian public entities. Subsequently, the SL groups have been working behind the scenes on the Bolivian Decree 1793, which regulates the Telecommunications Law No. 164. These are two important institutional initiatives that will probably shape the future diffusion of ICTs in Bolivia and the development of technical skills for open technologies.

Both cases constituted an ideal setting to study the group dynamics around an institutional project. They have been active over the last decade and have accumulated valuable experience. The groups have learned how to collaborate with diverse actors –including governmental bodies, universities, ONGs and firms– and how to engage those actors in their own micro-institutional reform. During the fieldwork, both groups faced challenges to expanding their activities. These aspects provided

---

1 Only the group's founders know the meaning of SIM, and it is not shared.
opportunities to witness the ways in which group members participated and came together to support an institutional project.

The SIM and the SL initiatives shed light on a setting, where the government does not have efficient policies to capitalize ICT, and where telecommunication and software industries are still incipient. Behind both initiatives are technological experts, who became aware of opportunities opened by the ICT revolution. The interviews conducted by the author confirm that there is strong aspiration among the technologically-active groups to shape their country’s ICT environment and therefore their own economic and social future.

3.2. Data

This study is based on micro-level data collected at the individual level in several Bolivian cities in between 2014 and 2015. Prior to the main field-work, exploratory interviews were conducted with members of the SIM and SL to obtain information about the events that defined the institutional process for both case studies, about their internal organization and the strategies used to pursue their initiatives, as well about the related historical background. In addition, I interviewed government representatives, university professors and firm managers, who supported the institutional ventures. Other important sources of data were written material, online forums and wikis, mailing lists and newspapers. I used these data to generate a chronology of events that defined the institutional process and to design questionnaire used in the main fieldwork. Table 1 and Table 2 presents the key institutional activities for the SIM group and the SL groups respectively.

For the main fieldwork, all interviews were face to face. In total, 40 formal interviews and numerous informal discussions were conducted (list available upon request). These interviews typically lasted between one and one and a half hours and were taped and transcribed.

3.3 Results

The results of the study are being published elsewhere\(^2\) and in this section, I summarize the main insights as part of the argumentation of this paper. The following paragraphs shall consolidate some of the core findings of this work.

*Institutional change pursued by institutional entrepreneurs is incremental, change is not planned but it emerges*

---
\(^2\) To not disturb the double blind review process, I did not include the references of the related papers. I can provide this information, if necessary.
Effectuation framework is originated in entrepreneurial studies (Sarasvathy, 2001), and it is suitable for environments with a high degree of uncertainty (Perry et al., 2012), where only short-term predictions are plausible. In such scenario, continuous experimentation might reduce incertitude. This allows, on the one hand, for expanding cycles of resources, as new means become available. On the other, a converging cycle of constraints evolves, when new goals emerge as the product of ongoing actions.

This framework were used to analysis the cases studies, and allowed understanding the institutional ventures as continuous processes with self-reinforcing dynamics, where actors employing available resources are seeking to generate new effects in conditions of uncertainty. In the SIM and SL cases studies, the effectual framework clarified how institutional change moves forward, when a small group orchestrates the effectual behavior. As new opportunities are opened, the ongoing effects of the actions at small group level uncovered, creating an emergent process of change. As summarized in Tables 1 and 2, existing means at the group level oriented the identification of opportunities (i.e. new institutional actions) and they were key for the progress in both institutional projects for the emergence of new institutional artifacts. This explains how the ACM-ICPC programming contests originated over the time the Olympiads Schools of Informatics and later the programming hackatons. It also explains how SL was gaining visibility as a vehicle of technological sovereignty within the Bolivian government.

Along the institutional venture, institutional entrepreneurs accumulate technical and social skills. Interactive learning is at the core of institutional ventures.

Effectuation has an iterative trial-and-error character, typical of experimental learning processes. Along the institutional venture of the SIM and SL cases, as long as the opportunities were emerging, the groups of institutional entrepreneurs were acquiring new technical capabilities and social skills. On the one hand, experimental learning on technical matters delineates the foundations of theorization and thereby contributes to the diffusion of new practices (Strang and Meyer 1993). In fact, training materials developed by SIM members supported the spread of programming contest. Likewise, technical performance gains moral legitimacy (Suchman, 1995). The technical expertise accumulated at GeoBolivia provided validity that SL can be exploited and managed by the government. On the other, social skills (as defined by Fligstein, 1997) have been learned and increased in both groups by adaptive trial-and-error processes. For instance, with regard to the advocacy work, Hardy notes “I could see that in matters that were not able to be planned, that it was better to try it, see the results, measure it, get feedback, and try it again. Of course, all this was intuitive, reactive, and empirical in the case of the SL community and 'our goal' (i.e. to include an article in the Telecommunication law)” (Interview, Aug 26, 2015). Departing from the micro-perspective, this evidence highlights the experimental learning as central component of institutional ventures.
<table>
<thead>
<tr>
<th>Institutional Actions</th>
<th>Available means</th>
<th>Partners &amp; Commitments</th>
<th>New Means</th>
<th>New Goals</th>
<th>New Institutional Artifacts</th>
</tr>
</thead>
</table>
| 2006: Negotiation with the ACM-ICPC Contests Regional Coordinator to obtain a seat for Bolivia and organization of the first regional contest in Bolivia. | - **Who we are?** The best programmers at UMSA University and Prof. Teran.  
- **What we know?** Participation in regional contests in Chile and Argentina.  
- **Whom we know?** Prof. Teran knew professors from other universities in different cities. Willmar knew a sponsor from the government. | - The contest regional organizer in Brazil.  
- University professors interested in the contests.  
- Sponsor firms. | - Initial Inter-organization Network, constituted by university professors.  
- Training materials.  
- Volunteers and collaborators in several cities. | - Lobby to include Informatics in the Bolivian Olympic School event. | ACM-ICPC programming contest organized at 14 universities in six different cities. |
| 2011: Lobby the Education Ministry to co-organize the Bolivian Olympic School of Informatics | - **Who we are?** National organizers of the ACM-ICPC contests with the support of 14 universities.  
- **What we know?** Expertise organizing programing contest at national scale. Expertise training students.  
- **Whom we know?** Professors and volunteers in other cities from different universities. | - Education Ministry | - Inter-organization Network with representatives from the Education Ministry and related bodies.  
- Programming teachers at schools.  
- Online platform to train students. | - Organize programming hackatons | Bolivian Olympic School of Informatics |
| 2013: Start organizing programming hackathons | - **Who we are?** National organizers of the ACM-ICPC contests.  
- **What we know?** Expertise in organizing programing contests.  
- **Whom we know?** Talented contest participants, who are eager to compete. | - Sponsor firms. | - Contacts and support from NGOs | - Create a co-working space to foster technology. | Three international hackatons. |
| 2015: Foundation of the TECH-HUB Bolivia | - **Who we are?** National organizers of the ACM-ICPC contests.  
- **What we know?** Expertise in organizing programing contests.  
- **Whom we know?** ONGs that can finance a co-working space to foster technology. | - Hivos ONG | - Software development projects.  
- Teams interested in the development of Video Games. | - | - |

Source: The Author
## Table 3

**SL GROUPS: Institutional initiatives and related effectuation means and outcomes**

<table>
<thead>
<tr>
<th>Institutional Actions</th>
<th>Available means</th>
<th>Partners and Commitments</th>
<th>New means</th>
<th>New Goals</th>
<th>New institutional artifacts</th>
</tr>
</thead>
</table>
| **2011: Lobby to include one article in the Telecommunications Law to support the adoption of SL in the Bolivian Government.** | - **Who we are?** Government outsiders, who are experts in SL and other ICTs activists.  
- **What we know?** Expertise in SL and politics.  
- **Who we know?** Few contacts within the government. | Not identified | - Increased social skills  
- Reflections around the SL adoption and sovereignty | Lobby for a Decree that regulates the Telecommunications Law | Article 77 in the Bolivian Telecommunications Law No 164. |
| **Since 2010: GeoBolivia initiative in the Bolivian Vice-presidency to provide open geographical information.** | - **Who we are?** Government insiders, who are experts and advocates of SL.  
- **What we know?** Expertise on SL, politics.  
- **Who we know?** Contacts within the government. | Not identified | - GeoBolivia users from several government bodies.  
- Reflections on the philosophical dimension of SL and its diffusion within the government.  
- Staff with SL expertise. | Replicate expertise gained in other spheres and demonstrate that SL technologies can be a vehicle for sovereignty. | Geographical information system based on SL. |
| **2013: Lobby to ensure that the Decree for the Telecommunications Law reflects the character of SL adoption as a means for technological decolonization and sovereignty** | - **Who we are?** Government insiders and outsiders, experts and advocates of SL.  
- **What we know?** Politics and expertise in SL. Understanding the power relations within the government.  
- **Who we know?** ICTs activists and a broad network within the government. | COPLUTIC Committee | ADSIB Administration under Nicolas Laguna leadership. | Migration to SL of all government bodies. | Bolivian Decree No 1793 |

Source: The Author
Interactions that matter: Personal networks of Institutional Entrepreneurs

Agency arises due to actors’ relationships and interactions with other actors. In other words, agency is distributed and relational (Lawrence et al., 2011; Battilana et al., 2009). Therefore, to understand how actors might be able to influence effectively in the change of extant institutions, it is important to understand the composition of the personal networks of institutional entrepreneurs, that contributes to the institutional venture.

For the SIM and SL groups, I asked to list names of persons, who collaborated in the institutional ventures (i.e. For the SIM group “Would you please list the names of persons that collaborated with you in the ACM-ICPC contests / School Olympiads of Informatic?”; for the SL communities “Would you please list the names of persons that collaborated with you in the approval of the Article 77/Decree?”). Because I was interesting to understand what kind of ties were used in the different stages of the institutional venture, I asked the interviewees to describe in detail the way the alter contributed the project, to characterize the relationship and explain its importance by giving a specific example. I used the emotional closeness and communication frequency variables to compute tie strength. The two variables represent different dimensions of interaction intensity (Marsden & Campbell, 1984). In addition I asked, where the alter has been worked and her position by the time she collaborated with the institutional project and if the alter has been changed her job since then. Lastly, the respondents where asked whether the alter in the list know each other: interviewees can evaluate the relationship between every two alters as "certainly" existing, "maybe" existing, "certainly not existing". This module allowed mapping the structure of personal networks.

Analysing the most important networks as indicated by the interviewees, I came up with a classification for the networks used. Institutional entrepreneurs as individuals have social networks with individuals within the audience, i.e. contacts that work at organizations and bodies that matters for the institutional venture (e.g. professors at universities, public servants). These contacts, the insiders are the most relevant for the entrepreneurs. They relay upon these contacts to moved forward with the project to gain practical legitimacy, as they can diffuse and promote the institutional venture inside the audience. Other important contacts are the contacts that support the project from outside the audience. These contacts support the venture in several ways including the organization of diffusion events, trainings, preparation of proposals, etc. Both type of contacts –insiders and supporters- allow institutional entrepreneurs to advance with the institutional work (Lawrence & Suddaby, 2006) along the institutional venture. Finally, the institutional entrepreneurs have contacts, who support them in technological matters. A pointed out before, technical expertise gains moral legitimacy among the targeted audiences. Interestingly and contrary to general assumptions regarding networks, contacts with high position or decision takers inside the audience are not considered as being part of the most
important networks. It seems that, institutional entrepreneurs try to influence them, but not directly, they relay more upon contacts in lower levels, technical ties and contacts from outside the audience.

*Institutional entrepreneurs acting in groups are not homogenous, promoters or champions are leading the institutional venture*

While the adoption of the small group as unit of analysis provides a more realistic view of agency for institutional change -as being dependent on the actions of multiple actors-, there is the risk to consider the group as an homogenous entity and ignoring the diversity of actors, who coalesce around an institutional project. For this reason, I explored the contribution of the group members and I tried to understand the dynamics inside the group and their diversity. Institutional entrepreneurs -acting in small groups- might play specific roles during the course of an institutional change process.

I based my analysis on the work related with technological champions and innovation promoters. They are defined as “individuals who actively and intensively support the innovation process” (Witte, 1973:15-16). Since innovations often lead to resistance, in his seminal study Witte (1973) identifies two separated roles and the type of barriers that each promoter helps to overcome. Barriers appear in the form of people who, either do not want the innovation or are not capable of implementing it. In this sense, the power promoter helps to reduce barriers of will, mainly by his hierarchical power and his access to resources, on the one hand. On the other hand, the expert promoter confronts barriers of ability by using his technical knowledge. Further studies have extended the promoter model. Hauschild (2001:43) presents the troika–i.e., power, expert and relationship promoters–, and suggests that the relationship promoter might helps to overcome administrative barriers by means of her internal networks, and dependency barriers by means of her external/inter-organizational networks. I took into account the troika of innovation promoters for the analysis.

The analysis pursued for the SIM and SL cases shows that it is possible to identify key actors inside the groups that resemble the troika of innovation promoters. Table 4 summarizes this research results. This evidence supports Dorado’s (2013) position of taking the small group as the unit of analysis, and advance our understanding of the dynamics around the institutional entrepreneurship and the view of distributed agency. Indeed, Garud et. al. (2002) and Maguire et. al. (2004) recognize that institutional entrepreneurs assume the role of technological champions, who orchestrate efforts towards collective action, and establish stable sequences of interactions with other actors in the field.

The promoter model supports the understanding of dynamics inside groups of institutional entrepreneurs and their diversity along the stages of the institution change. At the same time, departing from the micro-perspective, it provides new insights about how promoters influences institutional change that, ultimately could produce wider structural transformations.
<table>
<thead>
<tr>
<th>Innovation promoter characteristics</th>
<th>Key Actors</th>
<th>Actor’s Contributions</th>
<th>Institutional promoter characteristics</th>
</tr>
</thead>
</table>
| **Power Promoter**                | SIM – Willmar Pimentel (outsider) | - Start the Contests at UMSA university and looked for partners.  
- Sought to ensure the expansion of the initiative, by obtaining a seat for Bolivia for ACM-ICPC regional contests, and assuming the risk of the organization at national level.  
- Sought financial support.  
- Made the contests public to other spheres. | **Power Promoter**  
- Exerts leadership and set challenging goals.  
- Has the necessary hierarchical power to overcome barriers of will (Witte, 1973).  
- Able to take risks and negotiated in favor of the institutional change.  
- Overcame barriers of will providing motivational force within the group and in the audience. This is consistent with Fligstein(1997) |
|                                  | SL – Clemente Lami (outsider)  | - Started the initiative and looked for partners. He made the call for lobby activities.  
- Wrote proposals to introduce SL in the government. He fostered the appropriation of the ideology for Bolivia behind SL.                                                                                                                                                                                                                                                                                                                      |                                          |
| **Knowledge Promoter**            | SIM – Alberto Suxo (outsider) | - Assumed the challenge to raise students’ programming skills, when conditions were not favorable.  
- Acted first as coach, and later judge of the regional contest, he engaged with students, professors, and several specialists.                                                                                                                                                                                                                                                                                                               | **Knowledge Promoter**  
- Engages in multi-disciplinary interactions with others.  
- Supports the gain of moral legitimacy |
|                                  | SL – Sylvain Lesage (insider)  | - Assumed the challenge to develop a geographic information system based on SL.  
- He was part of the Committee in charge of defining the SL Migration Plan. He assessed the implementation of SL in several governmental bodies and regularly participated in the mailing list of the Bolivian SL community.                                                                                                                                                                                                                           |                                          |
### Innovation promoter characteristics

<table>
<thead>
<tr>
<th>Relationship promoter</th>
<th>Key Actors</th>
<th>Actor's Contributions</th>
<th>Institutional promoter characteristics</th>
</tr>
</thead>
</table>
|                       | SIM – Prof. Jorge Teran (insider) | - Brought his contact network, his colleagues adopted the contests in other universities.  
- Endorsed the initiative among other actors.  
- Fostered the appropriation of established standards (mimicry). | Relationship promoter  
- Provides external/inter-organizational networks to reduce dependency and administrative barriers  
- Are insiders and they eases acceptance of the institutional projects in their work environments |
|                       | SL – Senator Nelida Sifuientes | - Brought their contact network within the government..  
- Endorsed the initiative among other actors.  
- Decisive support by means of her experience in the legislative. | |

Source: The Author.

### 4. Discussion

This paper asks how actors might be able to influence effectively in the change of extant institutions?, and proposes to take an evolutionary perspective for the analysis. The exploration of this question, conducted in the context of two initiatives from the civil society that promoted the adoption of ICTs in Bolivia, suggests that the evolutionary framework provides additional insights about agency for institutional change as a result of interactive learning from several actors.

The findings of this research advance our understanding of institutional entrepreneurship in three aspects. First, it provides evidence that coordinated and uncoordinated activities of several actors, pursuing a common goal, can support the institutional change as a result of experimental learning. Second, the adoption of the small group as unit of analysis helped to identify the networks used by institutional entrepreneurs and the evidence allowed establishing a bridge between institutional entrepreneurship and institutional work. Third, complementary to the second contribution, the study provides evidence that the troika of promoters orchestrated the institutional ventures. This means that inside the small group are key actors that lead the project. This provides new insights of the distributed view of agency.

However, the study has two main limitations. The evidence from the two case studies has limited generalizability. However, the focus on two different case studies was necessary to explore how complex and nested activities occurred over time, and how effectuation logic was present in the evolution of institutional projects. The second limitation concerns the specificity of the cases: both are
related to the diffusion of technologies. Therefore, to assess the link between effectuation and institutional change, the findings of this study should be further examined.

Despite of these limitations, the contributions of this paper shed lights on how actors can influence the social system. This is relevant at a time characterized by the Anthropocene, when we are trying to understand the failure of, and face the difficult challenge of reforming, some of our institutions. A better understanding of embedded agency might enable actors to influence more effectively the direction of change and thereby favor more desirable institutional change.

However, recognizing that institutional change is a complex and uncertain process involving different types of forces and agents, it is important to explain not only how actors might influence the change of institutions, but also how their actions might have broader effects at macro-levels. Therefore it is necessary to devote additional efforts to trying to understand the effects of institutional entrepreneurship at meso and macro levels. In this sense, future research should put forth theoretical frameworks that embrace the complexity associated with institutional change.

Dopfer (2004) states that the interactions and the internal structure of evolutionary economic agents, delineates the micro-trajectories, which in turn, are component of a meso-trajectories that plays out over a population of micro agents. The evidence of this study shows that the micro-trajectories pursued institutional entrepreneurship has broader effects in Bolivia. Departing from this, I suggest the adoption of methods from complexity theory to explore: how the adaptation that stems from micro-interactions can shape the behavior, development, and performance at macro-level. Complex Adaptive Systems (CAS), for instance, studies the macro-level behaviors of a system both influence and emerge from the micro-level interactions among the elements comprising it (Levin, 2002, Manson, 2001).

Perez, 2013:101 states: “Innovation studies and evolutionary economics share an object of study that is constantly being transformed by the very nature of innovation and by its capacity to go beyond technology to modify organizations, institutions, behavior, and ideas”. Given the fact that, institutions are transformed much more irregularly and slowly than do technologies, this research proposal provides an attractive agenda Pursuing on these efforts will make possible to grasp a much more complete perspective on the processes that drive economic progress, and on the challenges imposed by the Anthropocene.
References


