

Civic Entrepreneurship as a Key Role to Organize Regional Innovation Networks

A Comparative Study of Local University-Industry-Government

Relations in Japan

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Abstract

This paper focuses on a policy process of organizing liaison functions for university-industry-government (U-I-G) relationship. We argue that civic entrepreneurship plays a crucial role in organizing the regional innovation networks. Surviving today's regionalized world, civic entrepreneurship would be shown by key actors who belong not only to each formal sector or organization but also to the same community with a common destiny. Regional competition seems to require such civic entrepreneurship to initiate horizontal-vertical reintegration of regional structure. Previously, we construct a theoretical basis, which emphasize an importance of context-oriented aspect, considering the related literature and some European cases. Next, as an empirical study, three significant cases in Japan are firstly targeted, in which the district national universities have shown rapid growth of numbers of U-I-G cooperation research. The study shows extreme varieties of organizational policy. Secondly we conduct an in-depth study, focusing on one of the Japanese cases, which has carried out notable practices both of informal social networks and of formal liaison coordination. We describe the policy process of the trans-sectorial organization for fifteen years. In the last part, crucial implications of the study will be presented.

Keywords: U-I-G relationship, Social networks, Civic entrepreneurship, Regional coordination, Inter-sectorial organization, Policy process.

1. Introduction

This paper focuses on a policy process of organizing liaison functions for university-industry-government (U-I-G) relationship. We argue that civic entrepreneurship plays a crucial role in organizing the regional innovation networks. Surviving today's regionalized world, civic entrepreneurship would be shown by key actors who belong not only to each formal sector or organization but also to the same community with a common destiny. Regional competition seems to require such civic entrepreneurship to initiate horizontal-vertical reintegration of regional structure.

Since the 1980s, the new trend of regional technology transfer system has expanded broadly among advanced economies. Successful practices, such as the Silicon Valley model (Saxenian, 1996), show us the importance of local networks among key actors for endogenous growth of high-tech clusters. According to the latest survey of the 19 European high-tech advantageous regions, spillover of information through informal local network is more valuable for local high tech SMEs rather than formal cross-sectorial cooperation of U-I-G relations (Keeble and Wilkinson eds., 2000). However, almost all of the regions, except such limited successful ones, have struggled with their traditional and institutional barriers among key sectors. Even in its early 90's of Silicon Valley, the region's people needed to make their new policies to reform the region's social and economic ties against a serious recession caused by the hollowing out of industry (JV:SVN, 1995). In this case a trans-sectorial NPO, which aimed to renew regional governance, was organized by key actors voluntarily and the brand-new movement of "grassroots leadership" (Henton, Melville and Walesh, 1997) was diffused. In Baden-Wuttemberg, Germany, the Steinbeis Foundation was initiated by the voluntary action of university professors in 1971, which shows us a very unique policy process, being developed from a local U-I-G liaison office into a multi-regional service provider working for each region's technology transfer. These remarkable lessons suggest a hypothesis that similar policy process exists in the regions, which aim at endogenous growth with the establishment of a regional innovation system. However, we should be able to see variants depending on each region's institution or quality of trust within networks, in terms of social capital (Putnam, 1992), on the one hand. In the beginning part of the paper we review the literatures of representative region's practices as well as the pre-research fieldwork in several regions in Europe carried out by the author.

As the main subject in this research, we target three significant cases in Japan: Iwate prefecture, Ishikawa prefecture, and Yamaguchi prefecture, in which the district national universities have shown rapid growth of numbers of cooperation research with

industry or the government sector. First of all we bring up the comparative study of the three cases as a sort of primary survey.

As the next step we go deeper into the Iwate case, which shows outstanding civic entrepreneurship of key persons to organize a human network “INS: Iwate Network System” voluntarily. The policy process to generate the network over a period of fifteen years will be described and analyzed, also as an evolution process from an informal network to a formal liaison platform within cooperation of top officers and bottom managers. At first a few young persons of each sector organized a small informal group to exchange information or knowledge. This very small group was recently transformed into a unique civic organization with more than 400 individual members, including various people from the president of a local university to the youngest workers of local SMEs, and in addition the governor has been strongly authorizing and supporting their informal activity. Based on such strong trust, the number of joint U-I-G projects among the members have been rapidly increasing. In the concluding part major implications and future research directions will be outlined.

2. Conceptual Framework

This study focuses on the organization process of regional U-I-G relationships mainly using an empirical approach. Previous to the fieldwork we constructed a conceptual framework to consolidate a basis of step-by-step approach, from grasping widely emerging phenomena toward focusing on locally in-depth investigations, as well as setting up research questions as a starting point.

2-1. How to relate emerging U-I-G relationship to regional policy process?

Throughout the last few decades, reinforcement of the University-Industry-Government relationship has been widely emerging, both as national policies and as regional ones, in the sense of science and technology policy. It can be regarded as a sort of new formation of social division of labor and, on the one hand, as commercialization of intellectual resources generated in universities and public institutions (Rosenberg and Nelson, 1994). We define that the former side would be a matter of organizational coordination among “sectors of different natures”, while the latter would be a matter of liberalization of trade among “individual participants”. Actually, both sides can be observed at the same time within each phenomenon, and a balance of the two sides should be dependent on each region’s or nation’s institutional

environment or industrial location, whether it is a market-driven or government-driven mechanism, and/or whether a globalisation-oriented or regionalisation-oriented economic policy (Hilpert, 2003). In either case, any functions of coordination should be needed regardless of a formal or informal approach.

In Europe such functions have been enhanced particularly within regions as regional coordination policy since the 1980's in advance of the recent U-I-G relationship policy, and the US has also followed (OECD, 1988).

We consider that the emerging U-I-G relationship policy has been implemented overlapping on the basis of such advanced regional policies, at least within regions taking advanced regional policies. In contrast to that, decentralization of power in Japan has been carried out since the second half of the 1990's. The Japanese Government almost at the same time seriously implemented the U-I-G relationship policy, just a few years later. However, such an overview is no more than one based on the governments' formal policy process. We shall investigate what are the realities within the regional policy process as a combination of both the formal and informal approach.

2-2. What is the role of the U-I-G relationship within the regional innovation system?

In the context of recent U-I-G relationship and technology transfer in regions, brand-new concepts of "regional innovation systems" or "regional cluster" have spread out since the beginning of the 1990's. However, they were not precisely defined, at least until the end of the 1990's. Cooke (1998) tries to define the term of "regional innovation system" looking back over the various practices of regional innovation and the studies about them throughout the 1990's, such as Saxenian (1994), Castele & Hall (1994), Scott (1994), and Porter (1990) et al. According to Cooke (1998) a new concept of "regional innovation systems" has been generated integrating such various schools of regional sciences and the school of post-Fordist supply chain relationships. "Finally, regional innovation systems were conceptualized in terms of a collective order based on microconstitutional regulation conditioned by trust, reliability, exchange and cooperative interaction." (Cooke, 1998: p.25). The new concept of "regional innovation systems" should be seen as much more situation or context-oriented, and collective learning, and coordination between competition and cooperation within regional actors and new organization within social networks are crucial factors in regions.

Compared with such an emphasis on the importance of "region" as a new subcentral unit of global economy, Hilpert (2002, 2003) emphasizes the appearance of advanced science and technology research agglomerations as "islands of innovation",

which are forming particular innovation networks themselves. We should consider this concept as another crucial side of the regional innovation systems that is from a part of global innovation systems in the regionalised world. Therefore the U-I-G relationship should be constructed carefully, depending on each unit's socio-economical situation or context as well as the innovation capability of each university, institution and industry.

Thus we can find U-I-G relationship has multi-sided roles within enhancing the regional innovation system. It should organize not only technology transfer systems but also social networks among regional actors of different standpoints, as a platform of knowledge or information transfer, to overcome information costs for matching cooperative partners and the uncertainty of individual R&D outcomes.

3. “Variants” of regional U-I-G relationship policy process: comparative case studies of European regions

Concerning technology transfer policy, Gibbons (1997) argues that there has been a predisposition toward the market-driven approach in the US and UK, while the government-oriented approach in the Continent of Europe, even though the market-oriented approach has been enhanced in such countries in the 1990's. However, this aspect of Gibbons would be just an overlook of macro prepositions. We would be able to observe many more variants depending on micro conditions, such as the difference between the Route 128 area and Silicon Valley in the US, as observed by Saxenian (1994).

In this section we present comparative case studies of some European regions, which describe the appearance of “variants” of the regional U-I-G relationship policy process. The study is mainly based on interviews to key persons by the author¹. These case studies aim to carry the investigation a stage further with an aspect of triangulation, to conduct a study of Japan's case in the next step.

3-1. Fifteen years of the Aachen technology region: a German case²

The Aachen region is one of the largest science and technology intensive areas in Europe, located on the border which adjoins Belgium and Holland. In 1986, the city

¹ We thank Prof. Okamoto of Hosei University for sharing the opportunity of interviews arranged for the science research project of regional coordination systems, granted by JSPS.

² The source of data is mainly based on the interview with a managing director of AGIT, and in addition, the primary data of their handouts and brochures were referred.

of Aachen, the surrounding four counties, Aachen University, Aachen University of Technology, Aachen Chamber of Commerce, and other interest parties co-founded AGIT (Aachener Gesellschaft für Innovation und Technologietransfer mbH), a non-profitable organization for regional coordination of technological innovation and transfer.

They aimed at organizing an enlarged wider area of Aachen, the “Aachen technology region”, transcending the administrative areas. However, it took around fifteen years to formally arrive at an agreement with the Aachen technology region. During that period of fifteen years AGIT had been implementing various programs which aimed at gradually enforcing cooperation among the different shareholders within the different sub-regions in advance. The coordinators of several technology centers in the wide area had enhanced mutual cooperation, involving the local SMEs in their technology transfer program. On the one hand, the secretaries of the regional development agencies from different sub-regions organized a virtual task force team, to coordinate and prepare frequent meetings of the shareholders, and also the symposiums and the trade shows. Actually, all such initial programs can be regarded as actions targeting to display the reality of inter-regional cooperation, showing how the policy and the practices of the regional collaboration in the wider area had been developed, toward the public. Thus a formal agreement was finally concluded among the sub-regions and the other stakeholders in 1997. Summing up a few years before 1986, the previous period that Prof. Eschwester had initiated the voluntary actions, the process needed totally around fifteen years.

Concerning the process, some simple questions should be asked: What sort of time had they spent? How did they solve such problems? We threw these questions at a managing director of AGIT who has been involved since the beginning of the process. Although she had been fluently explaining the outline in a businesslike way before we asked, she was suddenly at a loss for words and answered simply: “...it’s a never ending story.....” saying each word slowly and gravely, and breathing a deep sigh afterwards.

We should consider, with a context-dependent aspect, why they needed to spend that much time and trouble. Of course, it might be just an unsurprising fact for the continental European regions, no more than one of the numberless experiences of long-term transition. However, it appears too long if compared with the Silicon Valley experience in the early 1990’s (JV:SVN, 1994). We can see a unique organizing process in the trans-sectorial NPO, Joint Venture: Silicon Valley Network (JV:SVN), aiming to overcome the atmosphere of stagnation which spread over the wider surrounding area of Silicon Valley. Surprisingly, they did not need more than three years to form such a trans-sectorial task force, making the various regional actors concern themselves with

the task force.

Reading their self-analysis report (JV:SVN, 1994) describing the details of the process, we can understand they could not in the least achieve things easily. The same process of struggle as in the German case can be found. However, the crucial difference is the “speed”. One reason should be the balance; which course could be dominant, top-down authorization or the bottom-up voluntary approach? In the case of JV:SVN, it was a matter of “governance” rather than the “government” of the region, contrary to the German case. Each member of JV:SVN was able to play a double role, as an actor of one of the traditional sectors and as an actor of the civil society, within the explicit procedures of the policy process. Therefore they could secure the flexibility to carry out the success at a great speed.

In the case of Germany, there seems to be almost no flexibility which appears through such an explicit way. Streek (1997) argues that postwar Germany has been not a *laissez-faire*-type state (Anglo-American-type) nor an *etatism*-type state (French-type), which should be said an “enabling state”. According to Streek (1997), in Germany, there appear characteristic social sectors with a unique formation, not like ordinary fan-shaped pieces but like vertically and horizontally gridded pieces. There previously included every type of group, from traditional labor unions to emerging small civic groups. In contrast to that, in the US, such groups would generate outside the formal sectorial structure, as just counter parties.

We can claim that there are no essential merits or demerits between them. The efficiency of each policy process can be measured only from the context-dependent aspect, because the process always appears to depend on such a characteristic of the region and the structure depends on the institutional environment, which never changes radically except in a state of emergency etc. (Aoki, 2001). There should always be a reason why a particular institutional environment appears in a particular region. Apart from the aspect that speed gets the advantage of a region’s survival, we ought to study such a cause in detail, investigating the realities of regions.

3-2. Putting/Tearing down the ivory tower: A case in Mid-northern Italy³

Mid-northern Italy has become widely known as “the Third Italy” for its

³ The source of data is mainly based on the interview with managing directors of ERVET and DEMO Center, a PR manager of ASTER, a technological manager of a local SMEs. In addition the primary data of their handouts and brochures have been utilized.

miraculous economic growth and unique industrialization style, designated “flexible specialization” (Piore and Sabel, 1984). Its crucial characteristic is the dominance of numerous small and medium sized enterprises, which flexibly organize inter-firm networks and pursue entrepreneurship independently of the large enterprises. On the one hand, the distinguished ability of the government officials of Emilia-Romagna to implement efficient policies is pointed out (Putnam,1992).

The government of Emilia-Romagna has enhanced the regional U-I-G relationship since the 1980’s, phasing in various special programs. In 1985 they established a public agency of science and technology of Emilia-Romagna, ASTER, to make the intellectual resources in the regional academic field become involved in regional economic activities.

In Italy, while the national institutions such as CNR and ENEA disperse all over the country, the national government has enhanced the U-G relationship since the 1970’s, to make them allied with universities. According to Campodall’Orto and Sandri (2002), this policy obstructed the existing fruitful period of the U-I consortia of the 1960’s-70’s in northern Italy. “State financing for Reserach are used above all for management of didactics, instead are put apart renovation programs of Universities Laboratories, which become rapidly obsolete.” (Campodall’Orto and Sandri, 2002). Thus the industries started to leave the universities and this phenomenon caused serious damage to relations, and is still having its aftereffects today. On the one hand, Campodall’Orto and Sandri (2002) point out the existence of a serious communication barrier between the university professors and the managers or engineers of the local SMEs. Since they are usually speaking in completely different languages, they can hardly understand each other.

The aim of the ASTER should be, in fact, fulfilling the function of an information platform of the region’s scientific and technological resources, reducing the friction among the sectors. The coordinators and the managers, who are professionals in science or engineering field, are playing the role of “intermediary” for the academics. However, such a role of ASTER seems to target rather the academic field, stimulating the academics’ interests. However, it does not seem enough to let the academics pay attention to the local SMEs with the programs of ASTER. At the beginning of the 1990’s the need for more efficient programs for the local SMEs started to increase. “We reached the new stage of the regional development, which needs new programs for regional technology transfer and business incubation,” said a managing director of ERVET, the Emilia-Romagna development agency. Therefore they have seriously enhanced the relations between the academics and the local industries since the early 1990’s, using their strong method of regional coordination.

In 1992, a center for technology transfer, DEMO Center, was opened in the city of Modena, one of the hearts of Italian industrial agglomerations, through this new policy process. The DEMO Center was operated by the consortium of the local industrial associations and unions, Modena University, Bologna University, and others. The center building is provided by the chamber of commerce, in which there are a few satellite university laboratories, and several university students and a few professors are constantly stationed there. The center has surely succeeded to involve both the universities and the local SMEs into the cooperative activities held in the center. One technical director of a local SME, who has been pursuing R&D-oriented activities and global reach of business, says “we SMEs never expect of universities in Italy, forever.” The director has been taking the leadership to organize the unique consortium of the local SMEs, which form a local agglomeration of the medical industry, strategically aiming at inviting or taking part in EU-level cooperative research projects. While they are utilizing ASTER to negotiate with the authorities in the academic field, the process does not progress smoothly. “The universities spend three years, while we spend only one year for the same thing,” the manager said. However, even such a manager with a critical aspect to the situation rates a higher valuation on the activities of the DEMO Center. As one of the programs, the DEMO Center has provided graduate students as interns to the local SMEs, and 90 % of them entered the company.

As we observed above, in mid-northern Italy, they have strategically implemented the multi-sided policies for the regional U-I-G relationship. The most crucial points would be establishing a physical place, such as the DEMO Center, separated from the universities, and making academics come down from their ivory tower.

To conclude this chapter, we argue what is regarded as a “prototype” for the “variants”. The different cases, generating within each region’s institutional environment and depending on each regional context, can be regarded also as the “individuals”, of course. It is true that there would be no prototypes in the field, rather endogenous individuals there, depending on each region’s context or institutional environment. Nevertheless, if we regard the practices as “variants”, we can see the “prototype” not in the best practices such as Silicon Valley, but in any other characteristic common within them. The case studies in this chapter suggest that the concept of “regional coordination” to organize the U-I-G liaison structure and mechanism should be crucial. Therefore, we should investigate what are the realities of “regional coordination” from more microscopic view point. In the following chapters, we shall turn to Japanese cases and examine the realities focusing on one prominent

case.

4. “Variants” of regional U-I-G relationship in the Japanese regions: a comparative study of three district universities

In Japan, universities could not do any cooperative research with the industries until 1983. Since law prohibited them, the industries had been usually dispatching their researchers to the universities as research students, depositing money in a trust for research projects or just donating money. In 1983, after the law was revised, the national universities started to establish each regional research center, placing a professor as a liaison officer and a few managers from outside. First we shall overview the progress of the regional U-I-G relationship within the national universities all over the country. In Japan, each of 47 prefectures has one (or more) national university, their individual characteristics depending on each historical and locational background.

4-1. Attention to notable outcomes of the amount of cooperative research

The growth rate and the amount of cooperative research can be regarded as an indication to measure motivation levels of each university, at least in the first phase. The data cannot be utilized for relative evaluation because of the differences of each university’s capability. In this study we shall utilize the data to find notable indications among the universities. We focus on the transition of the period 1996-2001 because almost all of the universities established regional research centers throughout that period, and the data after the period can no longer show the indications of initial motivation. In the data, prominent outcomes have been carried out by a few universities throughout the period. Above all, three local universities, Kanazawa University, Yamaguchi University and Iwate University, indicate the peculiar number among the other local universities. The study will focus on these three universities and compare their details.

We conducted semi-structured interviews in the field⁴. The basic questions are as below, and they were flexibly modified in the sequences of the interview.

Basic questions for the semi-structured interview

- What kind of liaison structure or networks is the university building?
- What kind of actors does the university mainly do cooperative researches with?

⁴ The fieldwork was conducted in September and October, 2002.

- Are there any informal networks around the university? if so, how useful are they?
Are the key persons of the U-I-G sectors getting in touch with frequently? if so, is it formal duty or rather informal activity?

According to the scheme above we collected the data of each region. The informants are regional governments' officials and liaison managers or officers of the universities. Regarding Yamaguchi University, we asked the simple questions to the liaison manager by e-mail instead of visiting the site, and later complemented by an additional interview with one professor, significant key person as a liaison officer.

4-2. Top-down & bottom-up mixed and task force-driven type: a case of Yamaguchi University

Yamaguchi University is located in Yamaguchi prefecture, not in the capital city but in the local industrial city, Ube. Ube City is a castle-town type industrial district, which has generated around a parent company, Ube Cement. Yamaguchi prefecture is one of the earliest regions which made its industrial structure grow out of primary industries. Since the local economy has been depending on heavy industries, they are facing a serious hollowing-out of employment, especially for young people. An atmosphere of recession has spread out over the region. One professor, a key liaison officer, has said, "The atmosphere of regional crisis has been extremely serious. Several years ago I was asked by the Mayor of Ube City to lecture about the U-I-G relationship for the officials. Visiting there, I was so surprised because the lecture room was full of people, not only the governmental clerks but the firemen also there, overflowing in the gallery." While the regional actors are very interested in the cooperation, the local SMEs' R&D capacity is not so high because of the mono-cultured and subcontract dependent industries.

Yamaguchi University indicates the highest amount of cooperative researches among the district national universities. The dominant field is bio-medicine, in which they have been strongly promoting the inter-disciplinary relations between Medicine and Engineering. Generally in national universities, the barriers between the faculties are high, and promoting inter-faculty relations is very difficult. However, in the case of Yamaguchi University, the professors of the Faculty of Medicine displayed voluntarily eagerness to cooperate at first, and the collaboration has been carried out smoothly. Although there are almost no bio-medical related industries in the region, the university professors drew a future vision of the region, as a bio-medical engineering city.

In 1999 Yamaguchi TLO (technology licensing office) was co-founded

voluntarily by fifty professors of Yamaguchi University. Such a voluntary TLO can be seen only there in Japan, and the amounts of license application and technology transfer indicate the highest level in Japan.

Regarding the organizational strategy, a rather top-down structure under the direct control of the president can be seen. Several years ago they invited a famous professor in mathematics, a Fields prizewinner, as the president, and implemented innovative programs utilizing such a symbolic top officer's strong leadership. The regional research center is a part of their larger task force, in which they aim to integrate various projects such as business incubation and the education of management of technology. This is also a unique aspect of Yamaguchi University.

According to their annual report and internal attitude survey, both the rate of regional cooperation and the professors' awareness of the region are quite low. However, there should be some key persons, such as the 50 founders of the TLO, who play a role as civic entrepreneurs. Besides this, there should be some of "grassroots" phenomena. One significant example is a new product development of a mobile drip injector, triggered by the idea of a nurse working at the University Hospital.

To conclude, the case of Yamaguchi University can be defined as a top-down and bottom-up mixed, and also a task force driven type. Their task force driven strategy is quite explicit. However, there seems to be a gap between the university's magnificent visions and the region's practical needs. The university aims at global coordination rather than regional coordination, and tries to cooperate with other regions in the other prefectures regardless of the distance. "We aim at neither the central nor global market, rather the globe," said the professor. On the one hand, while the formal governance of the university is strongly top-down oriented, some key persons such as the informant professor are playing a key role to intermediate between the top-down authorizations and bottom-up activities.

4-3. Top-down oriented and conservative organization type: a case of Kanazawa University

Kanazawa University is located in Ishikawa prefecture, in the capital city, Kanazawa. In Ishikawa prefecture, 70% of the regional economy is concentrated in Kanazawa city and the surrounding two cities and two counties. Kanazawa is well known as an ancient city, which cultivated various arts and crafts following the culture of Kyoto, enjoying their prosperity in the Tokugawa period. The local industries have been diversely derived from the handicraft manufacturing of the pre-modern period. There are several local leading companies in each of the industries: textiles, precision

machinery, construction machinery, IT equipment, and others. In the Kanazawa area there are two more universities: Kanazawa Institute of Technology (private college) and Japan Advanced Institute of Science and Technology (national graduate school). There are no local cities with such a concentration as Kanazawa.

Kanazawa University indicates the second highest amount of cooperative research among the district national universities. The partner companies participate from quite a variety of areas such as Kanazawa, Tokyo and Osaka. The categories of industry are also varied. Cooperative research has been carried out evenly from various faculties all over the university. Regarding the organizational strategy, they have not established any task force. Several professors of each faculty are appointed as liaison coordinators, and they are co-operating in the U-I-G liaison function within the council system.

A newly appointed liaison manager of the university, dispatched from the national ministry of education and science (MEXT) said, “The results have been smoothly carried out without any promotion. In our university any problems are always discussed with the council system.” As the manager said, they did not need any task force outside the university’s traditional council system. However, the amount of cooperative research can be regarded as rather low-level considering the number of professors and their capabilities. Kanazawa University is historically one of the sub-elite universities, in which human resources are networked with top elite universities such as Tokyo University and Kyoto University. These universities could achieve higher result within a few years, without any particular organizational strategies or social networks, but only with each professor’s efforts simply with their personal networks. Therefore, the results should be regarded as no more than the development of their existing capacities. “It must be difficult to make this amount increase further with the same speed as we did over the last a few years,” said the manager. However, it seemed difficult to take the flexible bottom-up actions for the promotion. The decision-making mechanism of the liaison office is top-down oriented, with their advisory council organized by various interest parties such as the chamber of commerce and industry and the medical association.

Also within the surrounding regional environment, we can observe similar problems. The regional top officers such as the governor and the presidents of the three universities also organize the council of the public company for economic development. While there can be seen such a cooperative attitude among the top officers, the bottom-up activities to organize regional coordination are not active. A taxi driver, taking us from the station to the government office, said, “They are lords, you know...” The same phrase was also used by the other two informants in our interviews. The word

“lords” indicates such a historical behavior of the regional actors, and “they” indicates the domestic people, especially the local elite such as the officials, professors, the entrepreneurs, and other local celebrities.

To conclude, the case of Kanazawa University can be considered as a top-down oriented and conservative organization type.

4-4. Bottom-up oriented and social networks driven type: a case of Iwate University

Iwate University is located in Iwate prefecture, in the capital city, Morioka. The regional economy is not highly centralized but rather dispersed. Iwate is one of the latest regions to grow out of the primary industries, which depended on agriculture and fisheries until the end of the 1950’s. In the ‘off-season’ for farmers they went to Tokyo or other big cities to work. Since the 1960’s many large companies such as electric/electronic industries had transferred their factories to Iwate in pursuit of low cost labor and land. However, the region started to struggle with the hollowing-out of industry after the 1980’s.

Iwate University is so small-scale that both the number of the faculties and the professors are around half that of Yamaguchi University and Kanazawa University. The Faculty of Agriculture has been historically dominant because of the strong ties both with regional farmers and the Faculty of Agriculture of Tokyo University. In contrast to that, the Faculty of Engineering has been regarded as restrained and almost featureless. However, the amount of cooperative research is the third highest among the district universities in 2001 and the number per professor in engineering has been the highest among all of the national universities for the last few years. The results greatly amazed the national government and the other national universities.

In the liaison office of Iwate University there are nine full-time liaison coordinators. This number is quite irregular compared with the other universities. Kanazawa University has just two, regarded as almost the average. Yamaguchi University has four, regarded as even higher level. The liaison function of Iwate University has been explicitly enhanced since 2001, and it has been not only implemented as the university’s policy but as the university and the regional government co-operated policy. On the other hand, the university has also enhanced building the U-I-G relationship within the wider region. They have concluded several partnership agreements with the municipalities, and besides this, two of the municipalities have dispatched one official each to the university as liaison coordinator. Although they have never been given any special training, the university considers the

regional coordination as rather important, and such local officials should be educated as regional coordinators in the field.

Here emerges a considerable question. Why were they able to achieve such peculiar results? We could not observe such practices in the regional coordination in other parts of Japan. Our informants --- a professor, a regional government's official and a liaison manager dispatched from the regional government --- unanimously said, "The reason why we can achieve such results is INS." INS indicates "Iwate Network System", a sort of citizens' group, voluntarily established by a few key persons of the university and the regional government fifteen years ago. The group has more than 400 members (the total would be over 800 including the resting members), operating many working groups, regular seminars, and annual science and technology exhibitions for children and families. The greater part of the cooperative research was generated within this group. Key persons have intentionally promoted cooperative research utilizing the group members' networks. Since the governor of Iwate prefecture has been strongly supportive of their activities on occasions, the group could gain the trust of the public.

While the question above, "why can they carry out such results", has been not solved yet, we should conclude this comparative case study, defining the case of Iwate University as a bottom-up oriented and social networks driven type.

4-5. Policy process of the U-I-G relationship as situated-actions

In the previous sections we studied three cases of Japan's district national universities. As the cases show, there can be observed quite different actions even in only three samples. The crucial question would be why each of the three universities can achieve notable results of the U-I-G cooperative research with different conditions and capabilities. What sort of common factors can make them promote such results? We should not pay too much attention to the typology of the actions such as "top-down", "bottom-up", "task force" and "social networks". In the case of Kanazawa, they can carry out good results even though they show quite conservative actions with a typical rigid discipline of the elite model. If the capability and the market driven mechanism are working quite well, it may be no problem whichever side dominates. The crucial point would be how to promote the policy and how to involve the important actors within the method of the situated-action, which would positively utilize the given conditions and capabilities within their institutional environment, that is, the coordination.

However, if there are serious problems in the conditions or the capabilities, such as Yamaguchi and Iwate, they should take any strategic actions to overcome the existing institutional environments, driven by necessity. Both in Yamaguchi University

and Iwate University, we can observe the professors' actions of civic entrepreneurship. We should take notice of this factor of civic entrepreneurship to break through their existing situation. In the following chapter, we will focus on the Iwate case and dig deeper into their policy process.

5. Organizing process of the U-I-G relationship with a “trans-sectorial” liaison strategy: a case in Iwate

In this chapter we shall describe the policy process of the U-I-G relationship in Iwate, how they have organized the citizen's group “INS (Iwate Network System)” and the trans-sectorial liaison strategy. For the study we conducted several in-depth interviews with key persons: two professors, one governmental official, one entrepreneur of a local SME, and three liaison coordinators of the university's liaison office. Five of them, on the one hand, are key persons involved with INS. We conducted the interviews with them, regarding them as positive informants. The other two are dispatched from the municipalities, which formally aligns with the university. We conducted the interviews with them, focusing on how they recognize their position and how they socialize with the liaison office as a regional task force. In addition, this fieldwork was also carried out as a participant observation by the author, becoming a member of INS, participating some of their activities such as the annual meetings and the social gatherings, and discussing with them both as a researcher and a member. We mainly depend on the interview with the key persons, and the other data should be utilized complementarily.

5-1. Transition of the policy process over the past fifteen years

[1987-1991] Origin of the informal group

The origin of the U-I-G relationship in Iwate would go back to 1987. At that time in Japan a few district universities had just started to establish the regional research centers as liaison offices. In Iwate the tie between the Faculty of Engineering of Iwate University and the local commerce and industry was very poor. “The local people thought the Faculty of Engineering would never contribute to the region. Even the governmental officials of Iwate prefecture had looked at only Tohoku University⁵ with

⁵ Tohoku University is one of the top national universities located in the northeastern area's economic capital city, Sendai. The Faculty of Engineering of Tohoku University is world-famous for their academic capabilities.

regard to cooperation,” said every key person.

A young assistant professor, being anxious about the future of the region, proposed to organize an informal study group. Just less than ten members, the assistant professors, the governmental officials and the engineers of the local SMEs, gathered and initiated the group activities. They were still in their early 30s. The group simply aimed to enhance the ties among the different people of the different sectors, sharing the knowledge and information. On the other hand, some professors noticed that a strategy for the catch-up of the emerging U-I-G relationship policy was also needed. Both movements were going forward intertwining each other.

In 1990 Iwate prefecture established “A Guide for the promotion of science and technology of Iwate prefecture”. A young governmental official, one of the key persons of INS, took charge of this job. He said, “The guide already included important factors for the future, such as regional cooperation and liaison coordinator.” Since this period, the regional government and the university started to cooperate to establish each of their brand-new policies. The university needed to enhance formal ties with the regional government to get national finance for the large-scale research project. The regional government also needed the university’s support to carry out their “Technopolis” project in their endogenous manner, to promote the regional technology transfer policy.

[1992-1998] Establishment of the Iwate Network System

Thus, in 1992, the small informal group restarted as a private organization, Iwate Network System. The number of members reached over 150 people. At this time one of the top officers of the region, an honorary professor of Iwate University, was appointed as the president. Since then INS started to bring its ability to promote many cooperative researches between the university professors and the entrepreneurs. They could get to know each other not at the university or at the companies, but at the several working groups of INS. In 1991 the number of the cooperative projects was already over 20, and it was increasing rapidly. In 1993 a regional research center (liaison office) was formally established in the university. The university, the regional government and INS started to accelerate their promotion to enhance the regional technology transfer system under the cooperation; as it were a “triple alliance”.

After 1995 they started to enhance the relationship with the municipalities, especially the distant areas. The regional government established four satellite offices as the regional coordination center, utilizing the method of the public and private partnership. On the one hand, INS held various seminars in these areas and the members

played a key role to gain the trust of local actors. During this period several local officials of the municipalities participated to INS as new members.

Around 1995 the reputation of the practices in Iwate was spreading all over the country, and in 1997 an “Annual White Paper of the SMEs” issued by the national government introduced the case of INS as the best practice of the U-I-G relationship. The activities of INS became well recognized by the public, and the governor also started to publicly authorize them.

[1999-] New plan of the trans-sectorial liaison strategy

In 1999 the university organized a self-evaluation project looking back over the past five years, and carried out a new five-year plan of the U-I-G relationship. INS was also involved this evaluation process because their informal activities could not be seen as separated ones from the formal activities of the university and the government. At that time the amount of the members achieved around 700 people.

As the new plan they decided to enhance the liaison function of themselves, requesting the regional government’s all-out support. In 2000 a governmental official, who took charge of “A Guide for promotion of science and technology of Iwate Prefecture” mentioned-above, was dispatched to the university as a liaison manager. Under his direction, the liaison office started to work as a trans-sectorial task force. During 2000-2002, the number of liaison managers increased to 9 (except the director and the administrative staff.), 5 from the industrial sector including retired persons, and 4 from the governmental sector of the national, the regional and the municipal governments.

5-2. Implication of the social networks model in Iwate

As described above, the policy process of the U-I-G relationship in Iwate exactly arose from the voluntary actions of the key persons. Their small group has developed into social networks involving the grassroots people.

The factors which make such a unique networks possible would be 1) the two-sided liaison functions, both top official level and bottom manager level, and 2) the interactive decision paths, both the top-down authorization and the bottom-up voluntary actions. The crucial point would be the change of the position of the key persons, from ordinary to responsible posts through the fifteen years. Therefore they can absorb the needs directly from the field through the activities of INS and, on the other hand, they can reflect them directly into the public policy and quickly into the decision-making.

However, other “negative” factors would cause their success, such as 1) the

explicit situation of the recession, 2) no interests groups with strong power, and 3) no universities with strong abilities. The lack of resources and capabilities should be strategically overcome in the future with a long-term aspect.

6. Conclusion

In this paper, we began with the question of what is the role of the U-I-G relationship policy in the regional innovation system. Through the studies we investigate various cases, showing by means of evidence that civic entrepreneurs are playing a crucial role to overcome the existing institutions and to implement new policy. On the one hand, if the political bargaining among the interests group were dominant, it would be difficult to efficiently activate the civic entrepreneurship. In the case of that, they should carefully organize such civic entrepreneurship with a particular method depending on their particular institutions. There would be no absolute prescriptions as to which way they should choose: government driven or the market driven approach. The prescriptions would be found only by the strategic observation of their surrounding environment.

Building the U-I-G relationship is quite a complicated task. Even for the top companies, building an effective alliance mechanism between the different companies is quite difficult. Thus the key persons in charge of the regional coordination should overcome all sorts of problems lying in the gaps among the sectors and the actors. They need to be flexibly authorized with full responsibility to solve them quickly. In the case that the authorization mechanism is poor, something alternative should complement it. That “something” would be the civic entrepreneurship studied in this paper, which can build the alternative mechanism of “monitoring” and “trust”, and which can organize vertical and horizontal communication paths within the regional decision making mechanism. In the future more development of the studies of civic entrepreneurship can be expected, connecting with the studies of business entrepreneurship, to contribute to the balanced growth of the regions.

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