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The Industrial Cluster Plan of the Japanese government and the realities of regional economies in Japan

Der Industrie-Cluster-Plan der japanischen Regierung und die Realitäten der regionalen Ökonomien Japans

Abstract

The purpose of this paper is to introduce a new policy of the Japanese government for the resurgence of regional economies at the beginning of the 21st century and to reexamine its theory and realities. This new policy is the “Industrial Cluster Plan”. The advocates of this plan consider it possible to set up a region artificially. A region cannot, however, be created in such a way, but is a historical construct. Accumulated social capital is important for the recognition of a region. The social capital is decisive for collaborative undertakings among entrepreneurs. This is exemplified by the case of the area along Chuo Freeway, where we can recognize several regions.

Kurzfassung

Dieser Beitrag stellt eine neue Politik der japanischen Regierung vor, die auf eine Belebung der regionalen Ökonomien zu Beginn des 21. Jahrhunderts abzielt: den so genannten „Industrial Cluster Plan“. Er nimmt dessen Theorie und Realität unter die Lupe. Die Befürworter dieses Plans vertreten die Ansicht, dass eine Region auch künstlich geschaffen werden kann. So kann jedoch keine Region entstehen; eine Region ist vielmehr ein historisch gewachsenes Gefüge und das angesammelte Sozialkapital spielt eine wichtige Rolle für ihre Wiedererkennung als Region. Auch für die Zusammenarbeit zwischen Unternehmen ist das Sozialkapital entscheidend. Dies wird anhand des Gebiets entlang des Chuo Freeways verdeutlicht, wo sich mehrere Regionen ausmachen lassen.

1 Introduction

The Japanese Ministry of Economy, Trade and Industry (METI, formerly known as the MITI or Ministry of International Trade and Industry) launched its Industrial Cluster Plan for the resurgence of regional economies in 2001. According to the METI's Industrial Cluster Plan Promotion Office (2004), since the mid 1990s it had become difficult to continue the policy of factory relocation from three main metropolitan areas to provincial areas, because Japanese manufacturing companies have invested not at home but in China and the ASEAN countries. After the model of Silicon Valley,

METI hopes that regional economies in Japan can endogenously resurge through the implementation of the Industrial Cluster Plan. It is vital for this policy to create a human network within each “region”¹. If actors simultaneously compete and cooperate with each other in this network, then it is possible to create a competitive industrial cluster, and ventures can be born one after another from within the cluster. METI believes that industrial clustering and innovative activities do not come into being only spontaneously, but that they can also be created through government policies.

The theory behind the Industrial Cluster Plan stems from Porter (1990, 1998); some Japanese economists also advocate his thinking and provide the METI with theoretical support for the Plan. But they fail to notice a weak point of Porter's theory and have neglected some important aspects of regional economies in Japan. The purpose of this paper is to reexamine the policy and theoretical thinking of the Industrial Cluster Plan by shedding light on some of its concrete projects, especially on the project in the "region" along Chuo Free-way, which stretches westward from Tokyo.

The research method is qualitative based on long-term observations and hearings in the area along Chuo Free-way and a critical reading of publications by the central government and its theoretical supporters. Between summer 1997 and 2003, jointly with Prof. Matsushashi, Meiji University in Tokyo, I conducted interviews with the presidents of 78 successful SMEs in this area.² Our intensive interviews focused on the themes of how SMEs have innovated in their products and process technologies, and the extent to which their own networking with companies, public and semi-public organizations, both within the locality and outside it, contributed to these innovations. We also repeatedly interviewed the people in charge of the promotion of local economies at each local public organization to collect detailed information on the localities and SMEs.

2 Outline of the Industrial Cluster Plan in Japan and its theoretical problems

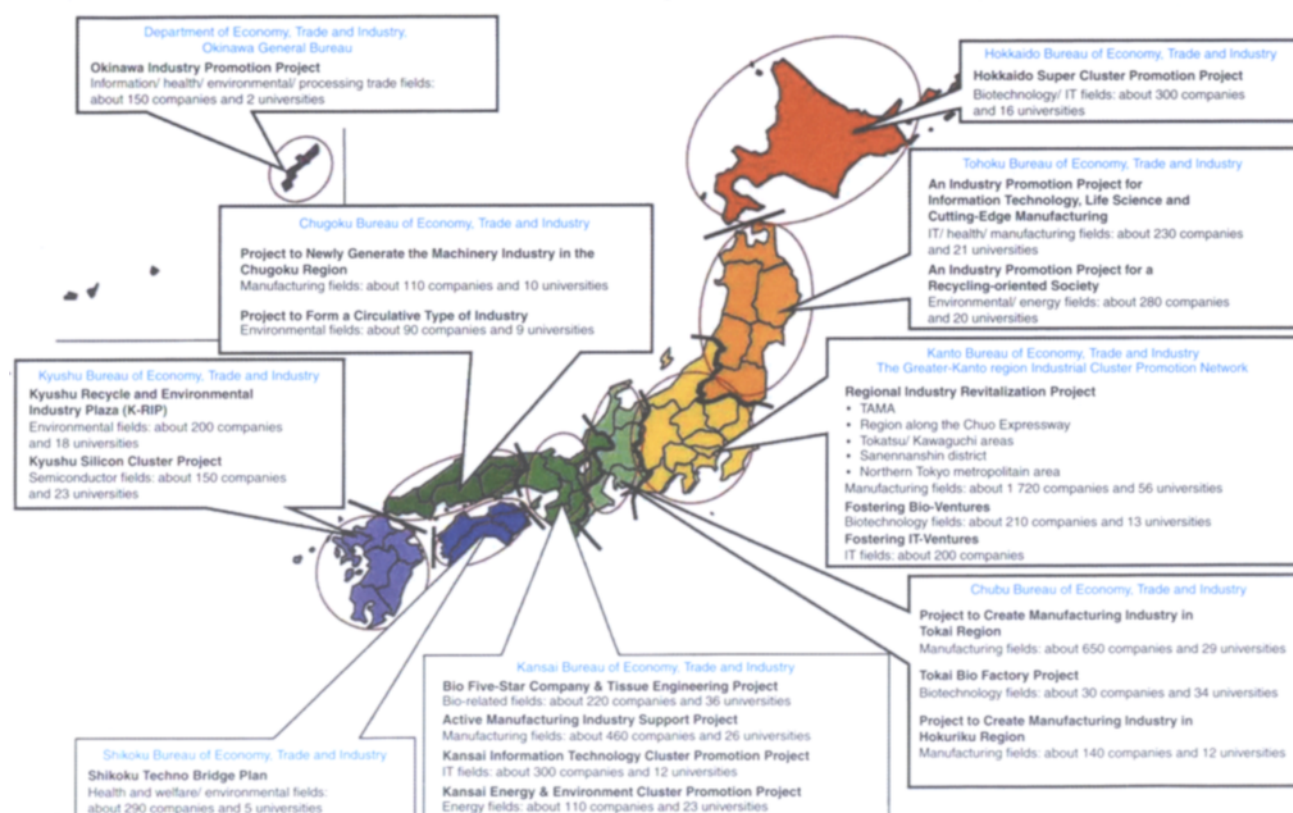
2.1 Industrial cluster projects and the underlying model

The Industrial Cluster Plan is implemented not by the central bureau of the METI, but by its nine "regional" bureaus. Their territories and 19 projects are depicted in Figure 1. These projects cover almost all of Japan's major manufacturing areas. But there are quite important differences in the constitution of manufacturing sectors among these areas. While some projects aim at promoting the new clustering of high-tech industries, such as biotechnologies and IT (information and communication technologies), the others aim at the resurgence of traditional industries, such as the steel and chemical industry in Kyushu and metal and machine industries in Kanto. METI considers it necessary to promote both types of industries for the resurgence of regional economies, as well as for Japanese economy as a whole.

According to the Industrial Cluster Plan Promotion Office of METI (2004), each of its "regional" bureaus plays a role as the hub of its own network. This involves (1) visiting local enterprises; (2) organizing research groups,

Figure 1

Territories of regional bureaus of METI and Projects of the Industrial Cluster Plan



Source: www.meti.go.jp/policy/local_economy/downloadfiles/Business_environment_prom_div/CLUSTER.html

creating opportunities for exchange among actors and holding seminars; (3) promoting exchanges and linkages among companies, universities and governments through activities of coordinators; (4) supporting marketing through the introduction of professional trading companies, and (5) supporting organizations which play the core role in the development of an industrial cluster through the initiative of private companies³.

METI recognized as of the beginning of 2004 that the Projects to Vitalize Regional Industries carried out in five areas by METI's Kanto Bureau (Fig. 1) were ahead of the other projects in promoting the Plan (METI website⁴). The Kanto Bureau refers to these areas as "regions", but this is somewhat misleading since it is doubtful whether each area satisfies an important criterion for a region in the sense of social and cultural geography. This discipline emphasizes the identity of the people in determining whether an area is to be called a region (Gregory 1994, p. 508). Storper (1997) attaches great importance to the relational assets in discussing regional economies. The relational assets cannot be separated from the regional identity of the people. Regional and local identity is very important for the promotion of regional economies. The present author will discuss this point later in this paper.

Among the five "regions", the western part of the Capital region⁵ is especially appreciated as a model for the Industrial Cluster Project. This "region" equates almost

exactly to the western suburbs in the Tokyo metropolitan area and stretches along the western part of National Road No. 16, which extends for some 40 km radiating from Tokyo's CBD. The central cities are Kawagoe in Saitama prefecture, Hachioji in Tokyo prefecture and Sagami-hara in Kanagawa prefecture (Fig. 2). This area is referred to by the METI as the TAMA region. This is a wordplay as TAMA means Technology Advanced Metropolitan Area and Tama has also been a traditional name of the county in the western suburbs of Tokyo since the 8th century A.D.

Industrialization in this area started in the 1940s as some factories were relocated to escape the danger of air raids. The relocation of large factories increased during the 1950s and 1960s, and automobile, electronics, machinery and related industries have since agglomerated along National Road No.16 (Takeuchi 1983, pp. 28-37, 53-72, 79-81). The MITI's Kanto bureau recognizes this area as a high-tech industrial cluster. If one extends this area from Sagami-hara south-eastwards to the sea and includes the whole area of Tokyo prefecture, then it accounts for 27 per cent of the engineering faculties of universities, 37 per cent of private R&D institutes, and 39 per cent of software houses in Japan (Kanto Bureau of the MITI 1996, pp. 27-28, 142-144).

In 1998, the Council of Vitalizing Industries in TAMA was established and this organization developed in 2001 into the TAMA Industrial Vitalization Associa-

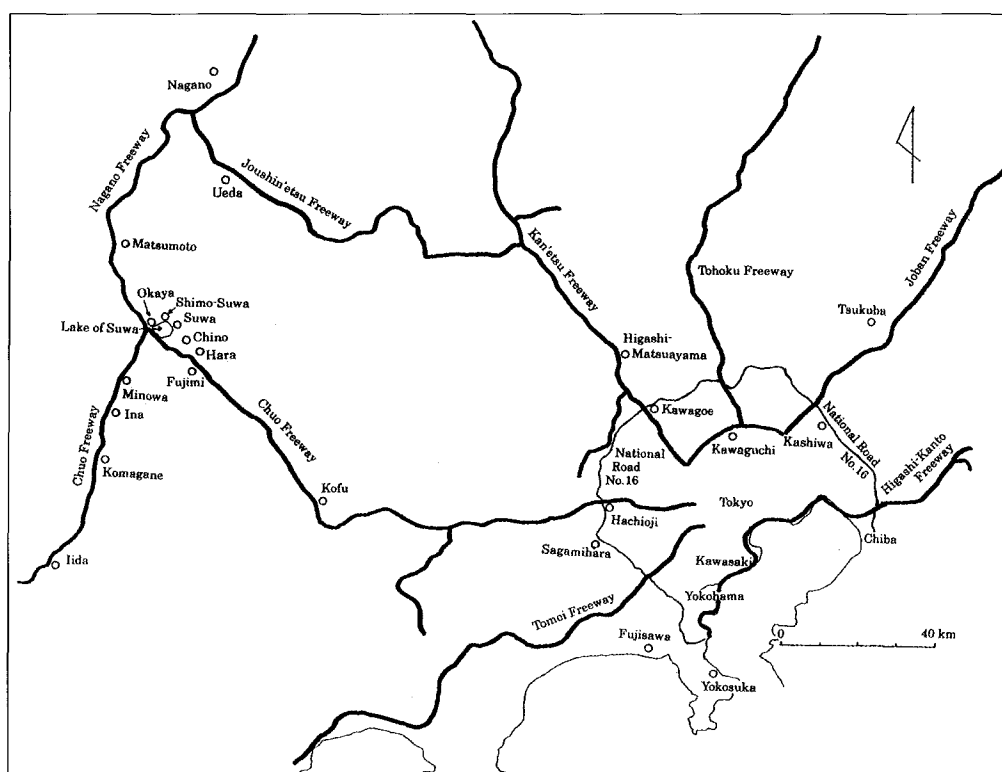


Figure 2
Tokyo metropolitan area
and industrial cities and
towns along Chuo Freeway

The built-up area of the
Tokyo metropolitan area
extends beyond
National Road No. 16

Created by the author

tion Inc., when METI launched the Industrial Cluster Plan. This association comprises 289 companies, most of which are SMEs, 38 universities, 16 public corporations, 19 municipalities, 3 prefectural governments, 45 chambers of commerce and industry (including similar organizations), 16 credit institutes, and 17 co-operative associations. These members are located in the area from Higashi-Matsuyama (northernmost) to Yokohama and Fujisawa (southernmost). It stretches about 80 km from north to south and about 40 km from east to west (www.tamaweb.gr.jp).

But it is not easy for all the members to make contact with each other because there are so many different members and the area is so wide. Therefore more local sub-networks have emerged; the *Mini TAMA Seibu Kai* (Association of Mini Western TAMA) in Saitama prefecture on 19th November 2001, *Mini TAMA San-Tama Kai* (Association of Mini TAMA in three counties of Tama) in Tokyo prefecture on 19th July 2002, and the Forum for Vitalizing the Southwestern Area of the Capital Region in Kanagawa on 17th June 2004 (www.tamaweb.gr.jp). This suggests that networking does not function in a “region” arbitrarily designed by METI.

2.2 Problems of theoretical thinking on the Plan

METI held a conference on the Industrial Cluster Plan in Tokyo in March 2003. The theoretical advisors to the METI, Prof. Ishikura and other academics, participated as panelists in the conference (Ishikura et al. 2003). All the panelists mentioned the theoretical thinking of M. E. Porter and admired it. It is true that the so-called diamond model put forward by Porter (1990) is important as a framework for companies to think in terms of competitive advantage. However, Porter originally presented it not as a regional, but as a national environment for companies. When we apply Porter's theoretical thinking to a region, it is necessary to reconsider what constitutes a region.

In this respect, the panelists only emphasize face-to-face contacts, and one panelist regards an area of distance between 160 and 320 km as a “region”, in Porter's terms. They think that face-to-face contacts are a prerequisite for knowledge creation. These are surely important for information flows, but face-to-face contacts merely offer the possibility of knowledge creation. It is not enough to innovate something and create new knowledge only by means of face-to-face contacts.

Although Cooke & Morgan (1998) and Maskell & Marmberg (1999) emphasize the importance of tacit knowledge for innovation, and thus of geographical proximity for knowledge creation, spatial proximity provides the mere possibility of easy encounters among actors.

We should remember that a pioneer on this theme does not attach importance to tacit knowledge alone, but rather to interactive transformation between tacit knowledge and coded knowledge (Nonaka & Takeuchi 1995). According to Nonaka & Konno (2000), it is important to have *ba*⁶, or a place of practice, where one can transform tacit knowledge into coded knowledge and vice versa. Knowledge can be created only in some contexts, and thus only in some place of practice. Knowledge concerning business usually emerges from intimate communication and collaborative practices among the actors concerned. And they can be effective in a place or a region in which there is social capital in the sense of Coleman (1990, pp. 300-313). It is usually accumulated in a local place or a region with which the local people and companies feel a strong sense of identification. It is not a simple function of geographical distance. And identity surely correlates with local and regional history. If we speak of an industrial cluster as a region, we should not ignore this important component of a region, namely the identification of the people with it. All the panelists – as well as Porter (1998) – ignored this aspect of a region.

There is one more problem with Ishikura's thinking. She restricts innovations solely to product innovation. She asserts that it is almost impossible to gain competitive advantage by means of process innovation (Ishikura 2003, p. 21). This thinking is too narrow to understand innovation. This is a matter of the “carrying out of new combinations” according to Schumpeter (1926, p. 100-101). He included not only the introduction of a new good, but also the introduction of a new method of production into the concept of the “carrying out of new combinations.” It is self-evident that a better good can be produced through better process technology and its related organization (OECD 2001, pp. 12-13). The division of labor between final-goods makers and parts suppliers, including SMEs specializing in some process technology, is predominant in the metal and machinery manufacturing industries of Japan (Watanabe 1997). Therefore, we cannot ignore process innovation and its related organizational innovation if we focus on a region where a large number of SMEs are located.

3 Attempt to bring about the resurgence of a regional industrial cluster in a provincial area of Japan

3.1 Outline of the Suwa county

The Suwa county in Nagano prefecture presents an interesting case for reexamining the Industrial Cluster Plan. It is located along Chuo Freeway and represents a core element of the industrial cluster project along this motorway alongside Kofu city in the Yamanashi prefecture (Fig. 2). The Suwa county consists of six municipalities, of which Okaya shows the highest density of the main manufacturing branches, followed by Shimo-Suwa, Suwa and Chino (Tab. 1). SMEs clearly dominate in the county.

Its manufacturing stems from the 19th century, when the silk industry flourished as one of Japan's export bases, especially at Okaya and Shimo-Suwa. But the main industries in the last decades originate from the precision-instruments factories relocated from Tokyo during World War II, as well as from companies established just after the war. Many companies were established to subcontract for these companies, and there were also spin-offs from the larger local companies between the second half of the 1940s and the 1960s.

SMEs in the county have evolved their own products and businesses since the beginning of the 1980s; for example, the largest and most important company in this county, Seiko Epson Corporation, has gradually changed its main products from watches to printers for personal computers and electronic devices such as

liquid crystal displays (Seiko Epson Corporation 2001).⁷ While this company is classified as a large multinational producing final consumer goods, most of the active SMEs in the Suwa county are producers of parts for the automotive industry, electronic equipment and industrial machines, and have also invested either in China or ASEAN countries.

In any case, the industrial tradition of precision machinery and instruments influenced the evolution of local companies. In this sense, we can find path dependency in the development of the county's economy over the last half century. It is clear, however, that the manufacturing industry has shrunk in the meantime. In 1975, the number of factories in the main manufacturing sectors stood at more than 800, employing around 30,000 people in three cities in the Suwa county. But the former figure has decreased to less than 700 and the latter to about 20,000 (annual Census of Manufactures).⁸

Before METI launched its Industrial Cluster Plan, the Council to Promote the Creation of New Industries in the Region⁹ along Chuo Freeway (CPCNIRCF) was established in 1999 (Industrial Cluster Plan Promotion Office of METI 2004, p. 16). But this council does not seem to work effectively. In its place, two organizations now serve as a real promoter of the Industrial Cluster Project for this "region". They are the Nagano Techno Foundation in Nagano city, and the Yamanashi Industry Support Organization in Kofu city.

Nagano Techno Foundation is the successor to the Organization to Develop Techno Highland in Nagano Pre-

Table 1
Outline of six municipalities in the Suwa county according to the main industrial branches, 2001

Name of municipality	Habi- table area km²	Popula- tion in 2000	Popula- tion density per km²	Number of		Density of		Establish- ments	Employ- ees
				establish- ments	employ- ees	establish- ments	employ- ees		
								per habitable area (km²)	
Okaya city	22,6	56.401	2.496	317	8.841	14,0	391,2	5,6	156,8
Suwa city	31,0	53.858	1.737	181	5.361	5,8	172,9	3,4	99,5
Chino city	71,2	54.841	770	192	5.732	2,7	80,5	3,5	104,5
Shimo-Suwa town	8,7	23.930	2.751	105	2.058	12,1	236,6	4,4	86,0
Fujimi town	40,3	15.392	382	33	3.432	0,8	85,2	2,1	223,0
Hara village	23,0	7.207	313	11	341	0,5	14,8	1,5	47,3
Region	196,8	211.629	1.075	839	25.765	4,3	130,9	4,0	121,7

Sources: author's calculation on the basis of the Detailed Information on the Census of Manufacture 2001 available through Research Institute of Economy, Trade and Industry, Population Census and database of Toyo Keizai Shinpo-sha.

Note: The main industrial branches here include manufacturing branches of fabricated metal products, various machines and their parts, plastic and rubber products.

fecture (ODTHNP), which was established in 1985 in order to promote the Nagano prefecture's technopolis policy. The so-called Technopolis Act was introduced in 1983, and the prefectural government of Nagano sought to present a technopolis candidate to MITI. But the rivalry among the regions was so severe that it was not easy to select one. While the region centered on Ueda city was finally nominated by the central government as Nagano's technopolis, the other four regions were designated as a technopolis area by the prefectural government. It was a compromise, and Suwa Techno Lakeside Branch was established under ODTHNP. It was later renamed Suwa Techno Lakeside Regional Center when ODTHNP was reorganized in 2001 to become the Nagano Techno Foundation. Although the secretary general of the Center is dispatched by the head office of the Nagano Techno Foundation in Nagano city, it is the presidents of the local companies that direct the activities of the Suwa Techno Lakeside Regional Center.

In brief, the so-called technopolis policy of the 1980s developed in the 21st century into the Industrial Cluster Plan. When the Law Promoting the Creation of New Businesses came into force in 1999, the CPCNIRCF was established. And one of the most important measures of the technopolis policy, namely the promotion of exchange among various companies of different industrial branches located in a region, was given legal form in 1999 and gave rise in 2001 to the Industrial Cluster Plan. This plan emphasizes exchanges among industries, universities and governments to create new businesses.

From the viewpoint of examining the feasibility of the Industrial Cluster Plan, there are three notable cooperative undertakings in the Suwa county.¹⁰ One is the organization of a research group at the DTF (Desktop Factory). The second is the Suwa Area Industrial Messe¹¹. The third is the establishment of a joint venture, *Sekai Saisoku Shisaku* Center Inc. The name of this company means Center for the Fastest Experimental Manufacture in the World.¹²

3.2 DTF research group

DTF is a micro-production system composed of very small metal-fabricating machines, such as milling, lathing, plating, washing, etc. The system as a whole is just like a factory, but it is so small that one can install it on a desk. Therefore it is generally called a micro factory. As early as the late 1980s the Research Center for Industrial Technology of MITI¹³ had the idea

of developing a micro factory in order to save energy consumption and space for production and managed to develop a type of micro machine already in 1996. On the other hand, some big corporations were engaged with R&D of micro machines at the same time. Sankyo Seiki Manufacturing Co., Ltd. is one of them.

This company is the second biggest corporation in the Suwa county. It was established just after World War II by an engineer as a spin-off from a larger local company producing valves for textile machines. It was so successful in the business of producing music boxes in the 1950s that it developed into a large corporation. Its headquarters are located in Shimo-Suwa. As the personal computer became wide-spread, it changed its main products to micro motors for HDD and other electronic machines and instruments. In these fields it was also successful.

A managing director of Nagano Techno Foundation acquired information that Sankyo Seiki was engaged with the development of a micro factory and in August 2000 proposed a plan to involve SMEs in its further development with the assistance of Sankyo Seiki, which uses the term "desktop factory" for the micro factory. DTF is a registered trademark of that company. In order to realize the idea, a coordinator¹⁴ visited a number of local companies in the autumn of 2000 to invite them to join the research group. He had been employed as an engineer by Sankyo Seiki and was a director of this company. He began to work at Suwa Techno Lakeside Regional Center in April 1999. As a result, 15 companies located along Chuo Freeway participated in the group and it started work in November 2000 (Tab. 2).

The activity of the research group at first consisted simply of learning about such issues as what constituted a micro factory, what the down-sizing of a factory meant, why it would become necessary in society, what fields it would be applied to. They had monthly meetings, and university professors, engineers working at the Research Center for Industrial Technology of MITI and engineers at large manufacturing corporations acted as teachers. SMEs also learned by visiting factories of the larger corporations which were already ahead in this new field. Such learning continued until the beginning of 2002. Meanwhile, it gradually came to be felt that engineers of the SMEs should try to develop their own DTF and send information on the DTF made in Suwa to the other regions in Japan and further afield. Sankyo Seiki permits the participating SMEs to use the registered trademark without paying a fee.

Table 2
Members of the DTF Research Group

Name of members	Location of		No. of employees	Main Business activities	Multinational or not
	Headquarters	factories			
Industry Network Co., Ltd	Okaya		4	Design of website and other services	No
S.N Seiki Co., Ltd.	Chino	Chino	170	Design and manufacturing of various machines and instruments	No. But yes for its parent
Koganei Corporation	Tokyo	Komagane	750	Manufacture of pneumatic equipment and related products	Yes. But service activity.
Sankyo Seiki Manufacturing Co., Ltd.	Shimo-Suwa	Shimo-Suwa, Ina	1 199	Electronic equipment, industrial machinery and equipment	Yes
Suwako Assembly Inc.	Okaya	Okaya	73	Manufacture of parts for ink-jet printers	No. Multiple locations within Japan
Daiya Seiki Co., Ltd.	Okaya	Okaya	150	Design and manufacture of collet chucks, various equipment and machines	No. Service office in Tokyo
Takashima Sangyo Co., Ltd.	Suwa	Suwa, Chino	250	Manufacture of precision-machined parts and design and manufacture of machinery and equipment	Yes, in China
Toyo Seiki Kogyo Co., Ltd.	Chino	Chino, Fujimi	258	Design and manufacture of various machines and tools	No. Service offices in Japan
Nagata Seiskaujo Co., Ltd.	Okaya	Okaya	50	Design and manufacture of machines and tools to process lenses on the basis of precision cutting	No. But subsidiary companies
Hiraide Precision Co., Ltd.	Okaya	Okaya	65	Processing of sheet metal	No. But cooperation with other SMEs
Marugo Industries Inc.	Okaya	Okaya	55	Design and manufacture of various machines and tools	Yes, in China
Mikuni Kogyo Co., Ltd.	Okaya	Okaya	237	FA machine, Assembly of ink cartridges for printers	Yes, in China
Misuzu Industries Corporation	Suwa	Suwa, Minowa	539	Manufacture of information equipment, design and manufacture of precision die and electronic equipment	Yes, in China
Kyouritsu Electric Co., Ltd.	Toyama Pref.	Toyama pref.	49	Design and manufacture of various electronic machines	No. But alliance with Taiwan's
National Institute of Advanced Industrial Science and Technology	Tsukuba, Ibaraki Pref.		Notes 1) Number of employees are as of 2004 or 2003 on the basis of the websites of each company. 2) The number of employees of Suwako Assembly Inc. is that of its parent company and its subsidiaries 3) Kyouritsu Electric Co., Ltd. is an associate member, and the other companies are full members of the group. 4) The last four organizations act as advisers to the members. 5) Three companies do not take part in the collaborative research activities of the group, as of October 2002: Olympus Corporation in Tokyo, Tamagawa Seiki Co., Ltd. in Iida and Ono Seisakujo Co., Ltd. in Okaya.		
University of Yamanashi, Department of Mechanical Systems Engineering	Kofu, Yamanashi Pref.				
Precision Technology Research Institute of Nagano Prefecture	Okaya				
Okaya City, Division of Promoting Industries	Okaya				

Sources: Suwa Techno Lakeside Regional Center and websites of the companies

3.3 Suwa Area Industrial Messe

It can easily be imagined that the plan of organizing the Suwa Area Industrial Messe might well provoke a reaction among the SMEs. The local government of Suwa city and Suwa Chamber of Commerce and Industry have actively cooperated since 1999, and jointly held a small fair of Suwa's industry in March 2000. More than 50 manufacturing SMEs located in Suwa city participated in the fair as exhibitors and got to know each others' businesses and technologies. Encouraged by the suc-

cess of the fair, the second fair was held in March 2001 with 70 companies participating.

Meanwhile, the heads of the industrial development offices of the six municipal governments in the Suwa-Okaya region had opportunities to exchange their policies and measures, and an idea emerged to hold a much larger manufacturing fair for the whole Suwa county. With grant-in-aid from the Japanese government as well as the local governments, the first Suwa Area Industrial Messe was held from 17th to 19th Octo-

ber 2002. Local companies and their associations took the initiative in organizing the "Messe" and municipal governments supported it.

This fair was so successful that it was held again both in 2003 and in 2004. The number of participating corporations increased gradually. Besides eight large corporations, almost 140 SMEs and several associations of SMEs exhibited their works and technology in 2002 (Brochure of the Suwa Area Industrial Messe 2002), and about 12,000 visitors attended the fair, according to a local newspaper (Nagano Nippo, 20th Oct. 2002). In 2003, more than 170 SMEs, including some from the neighboring regions, exhibited their products and technologies (Brochure of the Suwa Area Industrial Messe 2003) and about 13,000 people visited the fair (Nagano Nippo, 19th Oct. 2003). In 2004, more than 180 SMEs participated in the fair (Brochure of the Suwa Area Industrial Messe 2004) and attendance was up to 17,800 (Nagano Nippo, 17th Oct. 2004).

The resonance was very positive. As many as 67 % of the 107 companies which replied to the questionnaire in 2002 intended to participate in the fair in 2003 as well. A further 30 % replied that they were considering attending. And 91 % of the companies participating

started business negotiations at the fair (Nagano Nippo, 20th Nov. 2002). In 2003, 81 % of the 150 companies which answered the questionnaire recognized some successful results from the fair, with 76 % of the companies expressing their intention to participate again in the fair in 2004 (Nagano Nippo, 19th Nov. 2003). And in 2004 more than 70 % of the 99 companies which replied to the questionnaire started business negotiations, and 30 % of the 99 actually did enter into business transactions (Nagano Nippo, 5th Dec. 2004). Some SMEs which are members of the research group of DTF exhibited their own micro machines either in 2003 or in 2004.

3.4 Birth of a new venture

The third collaborative undertaking in the region is the establishment in April 2004 of the *Sekai Saisoku Shisaku Center Inc.* and preparing its work. The idea behind the joint venture is as follows: concurrent R&D of final goods and their parts is becoming more and more important, and there is room for SMEs specializing in the process technologies to be involved in this R&D by means of their capability to process metals at the experimental production stage as early as possi-

Table 3
Members of the Committee of Plan for the Fastest Experimental Manufacture in the World

Members	Location of Headquarters	No. of employees	Main Business activities	Multinational or not
President of Industry Network Co., Ltd.	Okaya	4	Design of website and other services	No
President of Soode Nagano Co., Ltd.	Okaya	120	Metal processing technology for automobile parts and electronic equipment parts	Yes, in ASEAN countries
President of Daiya Seiki Co., Ltd.	Okaya	150	Design and manufacture of collet chucks, various equipment and machines	Yes, in China
President of Hiraide Precision Co., Ltd.	Okaya	65	Processing of sheet metal	No. But alliance with other SMEs within Japan
Manager of R&D for production technology of Seiko Epson Corporation	Suwa	12,959	Design and manufacture of printers and electronic devices. Watches are its traditional product.	Yes
President of Taiyo Industry Co., Ltd.	Suwa	330	Forging of electronic equipment parts with special technology	No. Multiple locations within the Suwa-Okaya region
Managing director of Misuzu Industries Corporation	Suwa	539	Manufacture of information equipment, design and manufacture of precision die and electronic equipment	Yes, in China
President of Eastern Co., Ltd.	Chino	420	Printed circuit boards and power supply boxes	Yes
President of Nomura Industrial Group	Chino	170	Forging of metal with hollow. S.N Seiki Co., Ltd. is its subsidiary.	Yes, in Taiwan
Managing director of Sankyo Seiki Manufacturing Co., Ltd.	Shimo-suwa	1,199	Electronic equipment, industrial machinery and equipment	Yes

Source: Research Committee of the Plan for the Fastest Experimental Manufacture in the World and Nagano Techno Foundation Inc. (2003, p. 96)

Table 4**Members of the working groups of the Committee of the Plan for the Fastest Experimental Manufacture in the World**

Name of working group	company of the leader of WG	Number of members of the WG	among which employees of Sankyo Seiki Manufacturing Co., Ltd.
WG for research of local SMEs	Sankyo Seiki Manufacturing Co., Ltd.	9	4
WG for examination of IT equipment and activity standardization	Sankyo Seiki Manufacturing Co., Ltd.	7	2
WG for plan of small-batch experimental production on commission	Sankyo Seiki Manufacturing Co., Ltd.	10	4
WG for research on the needs of clients	Soode Nagano Co., Ltd.	8	4
WG for examination of management of the center	Sankyo Seiki Manufacturing Co., Ltd.	6	3

Source: Research Committee of the Feasibility of Plan for the Fastest Experimental Manufacture in the World and Nagano Techno Foundation Inc. (2003, p. 97)

ble. Agile pre-production is important because it has become a key factor for manufacturing companies to present a new model or a new good to the market as promptly as possible.

A plan for the Center of the Fastest Experimental Manufacture in the World was introduced to the SMEs located along Chuo Freeway in Nagano and Yamanashi prefectures at a seminar held at Minowa town in the Ina valley on February 26th 2002. This seminar was jointly organized by the Council to Promote the Creation of New Industries in the Region along Chuo Freeway, METI's Kanto Bureau, Nagano Techno Foundation and its three branches in Ina, Matsumoto and Suwa, and Yamanashi Industry Support Organization.

Among several regions along Chuo Freeway, it is Suwa that seriously committed itself to the idea. The Council of Suwa Techno Lakeside Regional Center established a Committee on the Feasibility of Research on a Plan for the Fastest Experimental Manufacture in the World in August 2002, after METI admitted a grant-in-aid for the research. The target of the Plan is concurrent R&D of parts and their experimental production of the so-called super devices or micro devices for small machines and equipment.

It is worth noting that the most important corporations and the most active and successful SMEs in the Suwa county were represented on the committee (Tab. 3). Local governments and university professors also became members. METI's Kanto Bureau participated in the meeting of the committee as an observer. The head of the Committee was a managing director of Sankyo Seiki. Among the five working groups established under the supervision of the committee, four were led by employees of Sankyo Seiki (Tab. 4). Therefore Sankyo Seiki seemed to take the initiative in driving the plan forward.

We should not, however, make the mistake of thinking that Sankyo Seiki would have sought to capitalize on the R&D and marketing power of the other local corporations and use the grant-in-aid from the government for its own purposes. It is embedded in the local society and its president had served as chairman of the Council of Suwa Techno Lakeside Regional Center, and its predecessor, since 1999. He must have felt a sense of mission that his corporation was able to contribute to the resurgence of the regional economy which had been in crisis since the beginning of the 1990s (Tab. 5¹⁵).

In March 2003, the working groups presented a final report, according to which large corporations in the machinery, electronics and automobile industries recognize it as one of the most important tasks to shorten the lead time from R&D through experimental production to mass production of various new models and goods. Competitive advantage for manufacturing corporations depends not only upon the quality and cost of goods, but also upon the capability to shorten the lead time. There may well be a great deal of demand for the outsourcing of agile experimental production of parts of new models and goods, especially because it has become more and more difficult for large corporations to maintain all the capabilities concerning R&D and experimental manufacture of parts in-house.

On the other hand, there were problems regarding whether the local companies could collaborate to respond to the demand. Therefore the working groups of the committee looked into which companies were ready and capable of collaborating with each other for the new business. As a result, about ten companies were identified as having both the intention and capability of entering into collaboration. They recognize that their competitive advantage depends upon their skill in the fine processing of all the kinds of materials. They think that the starting point of the innovation, for

Table 5

Changing ratio of the main manufacturing industries in three cities in the Suwa county in comparison with two large cities in the TAMA "region" and Ota-ku in Tokyo between 1985 and 2002 (1985 = 100)

Indicators	Year	Suwa county				TAMA "region"		Tokyo	Japan
		Okaya	Suwa	Chino	Subtotal	Hachioji	Sagamihara	Oota-ku	
Number of establishments	1985	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
	1990	98,9	96,7	104,3	99,6	109,2	114,5	85,8	103,7
	1995	86,5	78,4	104,7	88,6	115,2	95,9	69,7	93,3
	2000	76,5	82,6	95,3	82,5	107,6	103,8	60,9	84,9
	2002	65,2	68,0	78,7	69,1	85,1	82,9	47,7	72,7
Number of employees	1985	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
	1990	93,2	95,2	111,5	97,8	106,3	99,2	76,8	104,3
	1995	78,6	77,5	105,2	84,1	93,3	91,6	61,7	96,1
	2000	75,6	74,7	99,9	80,6	81,9	82,9	49,3	87,8
	2002	66,4	61,8	92,3	70,6	73,0	63,7	39,7	79,5
Gross value-added	1985	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
	1990	124,1	50,6	136,5	82,8	132,1	179,8	96,2	132,2
	1995	108,3	28,2	158,9	67,7	127,1	166,8	81,0	129,0
	2000	88,4	31,7	159,5	63,8	121,7	161,9	70,5	127,2
	2002	74,1	22,2	153,3	53,3	120,6	67,4	57,5	114,6
Value-added per employee	1985	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
	1990	133,2	53,2	122,5	82,0	124,2	181,3	125,4	126,8
	1995	137,8	36,4	151,1	77,6	136,2	182,2	131,2	134,2
	2000	116,9	42,5	159,7	78,6	148,7	195,2	143,0	144,8
	2002	111,6	35,9	166,1	74,6	165,2	105,8	144,9	144,1

Sources: Census of Manufacture by Cities, Towns and Villages – 1990, 2002

Note: The main manufacturing industries mean the total of fabricated metal products, general machinery, electrical machinery and equipment, transportation machinery, precision instruments and machinery.

metal-processing SMEs, is the acquisition of information on new materials. Otherwise they could not create new knowledge on how to be more agile in undertaking fine processing than their competitors. SMEs in the metal and machine industry are always under the pressure of this kind of competition. And skill or knowledge for processing new materials is tacit knowledge rather than coded knowledge, at least at the earlier stage of R&D and experimental production. This recognition of the SMEs contrasts with the thinking of the advocates of the Industrial Cluster Plan at the level of the central government.

Although the report of the committee guaranteed the feasibility of the new business, it took several months before the decision was made as to who would really take on the risk of a start-up. As a result, a new company was established in April 2004 through the investment of seven local manufacturing corporations and three producer-service companies (Tab. 6). This venture is intended to function as the node between local SMEs and customers located outside Suwa county.

3.5 Social capital for collaboration

How was it possible for the local people to implement these three collaborative undertakings? One of the important factors is social capital. In the world outside business, presidents and managers of the SMEs have intimate and intricate relationships with each other in the locality. Not only chambers of commerce and industry, but also the other societies such as Lions Clubs, Junior Chambers, alumni associations of schools, etc. play an important role for the experience of cooperation outside business. Let me refer to a few examples of social capital in the locality.

Soode Nagano and Hiraide Precision, which rank among the founders of the *Sekai Saisoku Shisaku* Center, demonstrate a typical case of social capital accumulated among SMEs. The presidents of both companies became acquainted with each other in the Junior Chamber of Okaya in the 1980s. This is an organization for the younger generation of entrepreneurs, and its object is not business but to make a contribution to the vitalization of the local community in Okaya. The

Table 6
Investors in the Sekai Saisoku Shisaku Center Inc.

Name of investors	Location of Headquarters	No. of employees	Main business activities
Industry Network Co., Ltd	Okaya	4	Design of website and other services
Soode Nagano Co., Ltd.	Okaya	120	Metal processing technology for automobile parts and electronic equipment parts
Daiya Seiki Co., Ltd.	Okaya	150	Design and manufacture of collet chucks, various equipment and machines
Hiraide Precision Co., Ltd.	Okaya	65	Processing of sheet metal
Seiko Epson Corporation	Suwa	12.959	Design and manufacture of printers and electronic devices. Watches are its traditional product.
Misuzu Industries Corporation	Suwa	539	Manufacture of information equipment, design and manufacture of precision die and electronic equipment
Nomura Industrial Group	Chino	170	Forging of metal with hollow. S.N Seiki Co., Ltd. is its subsidiary.
Sankyo Seiki Manufacturing Co., Ltd.	Shimo-suwa	1.199	Electronic equipment, industrial machinery and equipment
Hachijuni Bank Ltd.	Nagano		Banking
Hachijuni Leasing Co., Ltd.	Nagano		Leasing

Source: website of the Sekai Saisoku Shisaku Center Inc. (www.suwa-saisoku.jp/co_list.html)

presidents of these two companies established a network with the other local entrepreneurs participating in the Junior Chamber, at the beginning of the 1990s, and have jointly presented their own technologies in various domestic and foreign trade fairs. Their collaborative marketing activities have been successful, and reliance on each other has become solid (Yamamoto and Matsuhashi 2000).

We find another example of social capital in some members of the DTF research group. They were suppliers almost exclusively for Seiko Epson Corporation until the beginning of the 1980s. Seiko's technology was transferred to these local SMEs in the 1960s and the 1970s. As Seiko Epson began to change its main products in the mid 1980s, it encouraged its suppliers to seek main markets outside the locality. Nevertheless, the relationship between Seiko Epson and the local SMEs has been maintained, and an entrepreneur of a DTF member company told me that there is atmosphere of cooperation among many local SMEs when Seiko Epson exercises leadership in some event (Yamamoto and Matsuhashi 1999). The local people maintain this atmosphere through everyday exchanges and collaboration outside of business. On the other hand, local alumni associations are also important for human relations. One of the DTF members was able to gather engineers and craftsmen as it changed from a mere metal processor to a manufacturer of specialized machinery for large corporations because the president of this company had close personal relationships in the local community.

Cooperation and collaboration in business can be established easily among the SMEs on the basis of social

capital accumulated over the last few decades. They have common experiences in the daily events and the local public sphere surrounding business.

4 Conclusion

As described above, the Industrial Cluster Plan has evolved from technopolis policy. The advocates for the Plan always emphasize cooperation in an industrial cluster. But they do not make clear on what terms companies and people cooperate smoothly with each other. It is social capital that underlies this cooperation. It is true that face-to-face contacts are a prerequisite for the proper functioning of social capital. But social capital cannot be accumulated solely through such contacts. It is much more important that the actors have experiences of practicing something collaboratively than merely of exchanging information with each other. As a result of such practices, they come to feel identity with their local community. In the Suwa county, there have been various occasions for the SMEs and their people to cooperate with each other. An area where the people have common experiences is literally a region filled with social capital. This is a relational asset in a region and equivalent to the untraded interdependencies (Storper 1997).

It is true that the policy aims to inspire and boost the morale of SMEs. But this policy from central government is not as important as the endogenous cooperation among the leaders in the local economies and the local governments. This cannot be fostered merely through face-to-face contacts. And even if the central government and its related organizations artificially

delineate the boundary of a region, this does not mean it will function as a locale for collaboration, as exemplified in the TAMA “region” and the “region” along Chuo Freeway for the Industrial Cluster Plan.

Various new combinations in the Schumpeterian sense have emerged in the Suwa county. But the time has not yet come for us to be able judge whether the new combinations really can lead to business success. Table 5 suggests that the Suwa county, which experienced a scaling-down of industrial agglomeration through the 1990s, still suffers from its decline at the beginning of the 21st century. There are, however, some SMEs in this region which are successful in developing new products. One example is Daiya Seiki Co., Ltd, a member of the DTF research group. It developed a new machine with which a worker can make a very fine hole in metal. For this, in 2003 Daiya Seiki received the Prize for Promoting Machine Industry awarded by the METI's Small and Medium Enterprise Agency.

Footnotes

(1)

The term “region” is a translation of the Japanese word “*chiiki*”. This word is vague in some respects. “*Chiiki*” can mean various areas of very different geographical scales, from a primary school catchment area through, for example, to Kyushu Island, consisting of several prefectures, or to a transnational area such as Asia. The Japanese government uses “*chiiki*” both for nine jurisdictional areas and for an area smaller than a prefecture. This reflects the everyday usage of the term by Japanese people. In this paper, the present author uses the term “region” with quotation marks whenever this word is used by METI.

(2)

The results of our interviews are recorded in Yamamoto(2000; 2003).

(3)

The subjects of these actions are not officials of the “regional” bureau of METI, but local actors and coordinators, as this paper later shows.

(4)

www.meti.go.jp/policy/local_economy/downloadfiles/Business_environment_prom_div/CLUSTER.html

(5)

The Capital region is a very wide area specified on the basis of the enforcement ordinance (1957) of the Law of the Capital Region Development, which was passed in 1956. It consists of the prefectures of Tokyo, Kanagawa, Saitama, Chiba, Gunma, Tochigi, Ibaraki and Yamanashi.

(6)

Ba is a Japanese word which can be translated by the term “place”. But *ba* does not only mean a geographical location, but also an occasion or an opportunity when subjects interact with each other. *Ba* is occasionally translated as “platform”. In a physical sense, a room in a building can become *ba*. But a very wide area, in which it is not easy for people to interact with each other, cannot become *ba*.

(7)

It may seem that the year of foundation of the Seiko Epson Corporation was 1881, according to the title of the publication by the Seiko Epson Corporation (2001). But this is the foundation year of the Hattori Watch Store in Tokyo. This store developed into Seiko-sha, which began to produce watches in 1892, subsequently establishing a munitions factory in 1937. On the other hand, an entrepreneur in Suwa established Daiwa Kogyo Ltd. to subcontract from Seiko-sha in 1942. He had been employed by the munitions factory and managed a watch store in Suwa at that time. Daiwa Kogyo developed into a watch maker after the war and later evolved into Seiko Epson. This company has gradually become independent from Seiko Corporation group since the 1960s with regard to capital and market as well as technology.

(8)

The peak period of manufacturing development in the Suwa county, as well as in Japan, is the beginning of the 1990s, although for reasons of space the present author does not here include the detailed statistics.

(9)

We should note that the word “region” is prescribed in a singular form. But there are several regions with strong local identities in the area along Chuo Freeway.

(10)

The description of these three undertakings is based on interviews conducted in 2002 and 2003 by the present author, and his colleague Prof. Matsuhashi, with key figures in the region and on a number of documents.

(11)

This is the name which the local people in the Suwa-Okaya region use for the event in English. But it would be better to use the name “Fair of the Manufacturing Industry in the Suwa-Okaya region”.

(12)

This company calls itself in English “Rapid PreProduction Support” (or RPS).

(13)

Since the reform was carried out for the organization of Japan's central government, the Research Institute of MITI, which is located in the science city of Tsukuba, has become an independent administrative agency and since 2001 has borne the name “National Institute of Advanced Industrial Science and Technology”.

(14)

MITI or METI believe it necessary and effective to allocate a coordinator in an area to promote exchange among various SMEs and universities. To this end it launched a program in 2000 to subsidize local governments and the related organizations, which are eager to promote collaborative undertakings among businesses and universities, to help to cover the labor costs and the necessary expenses of employing a coordinator.

(15)

Table 5 includes the indicators of Ota-ku in Tokyo and Japan as a whole, besides three cities in the Suwa county, as well as two cities in the TAMA “region”. Ota-ku is a well-known industrial district in Tokyo and the largest agglomeration of SMEs engaging with metal and machinery industries in Japan. The sudden drop in the indices for Suwa is attributed to the exodus of the manufacturing function of Seiko Epson from this city in the second half of the 1980s.

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