

## Chapter 1

### Consideration of Basic Concepts and Problematization

This chapter develops arguments on basic understandings of concepts and social conditions for the sake to make further arguments on the issue. Concretely speaking, it argues the concepts of “knowledge society”; “knowledge”; and “knowledge production” with the understandings of contemporary social contexts of them (section 1 to 2). As actual social conditions of contemporary Japanese knowledge production, it explores knowledge production conducted by state owned sector, business sector, university, and thinktanks, since those actors have invested a lot of capital and energy on knowledge production. Through these arguments one can grasp what kinds of knowledge production has been conducted actively and what kinds of things have been talked in terms of knowledge production in contemporary Japanese society. Section three critically considers the social contexts of main stream economic centered knowledge production especially in terms of neoliberal globalization. Moreover, this paper problematizes socio-economic gap stems from the connection of neoliberal globalization and dominant knowledge production. Through these arguments detail points as premises for arguments and analyses and also points of problematization are provided.

#### Section 1 Knowledge Society

##### 1-1 Features of Knowledge Society

Contemporary societies are often explained as “knowledge society”; “knowledge based society”; “knowledge economy”; or “knowledge based-economy” meaning next stage of industrial society and information society. In international level, OECD published the report named “The Knowledge-based Economy” in 1996; it was thought as beginning of argumentation (Brusoni, 2002: 6). Also, in domestic level, as seen later, science and technology conference as state owned sector and Keidanren as business sector have used the term: knowledge society and knowledge based economy. However, in most of the arguments, definition and intention are entangled because of their diverse contexts and purposes. Also as concept some confuse “knowledge society” sometimes with “advanced information society”<sup>1</sup>.

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<sup>1</sup> For example, although Frank Webster uses the term “information society” and “advanced information society” without clear distinguish in his work “Information Society”, in some contexts the contents of those terms mean the society in which knowledge has certain importance. He uses the term “knowledge” in terms of research and development, however it has limitation to grasp the idea of research and development which requires advanced and professional knowledge by the framework of information society. This kind of confusion or ambiguity can apply to Tuomi (2001). He sometimes uses the term information society and knowledge society to express the same society. According to Kido, the two terms can be distinguished as followings: arguments on knowledge society cover value creation or decision making based on expertise and information, and on the other hand, arguments on information society cover computing networks, transmission of information capital, and media (1990: 84-85). Referring to these arguments, this paper defines knowledge society as

In general sense knowledge society can be characterized as society in which knowledge expands its importance qualitatively and quantitatively (Hasson, 2002: 41). However, from historical perspective, most of the societies in various era regarded knowledge as something important. For example, in ancient Israeli and Egyptian society knowledge had certain important roles. In ancient Israeli society Tora-knowledge as religious systematic knowledge organized society; in ancient Egyptian society knowledge related with religion, astronomy, and agriculture organized society and gave authority to knowledge users (Stehr, 1999: 8-9). Then, what kind of particularity does contemporary knowledge society have? From broader perspective, knowledge society has two large streams of arguments; first has focused on field of economics in which economic activities have come to be knowledge-based, and second, many aspects of daily life of people have come to be knowledge-based. G. Bohme argues the definition of knowledge society has following elements: that is, 'science and technology have become the major variable in the development of society'; 'science has become an (immediate) force of production'; and 'the life chances of the majority of the population are dependent upon the particular level of knowledge' (1997: 449). Namely, certain development of science and technology, and information-communication technology; the certain relations of knowledge and production; and influences on the realm of daily life of people, are the core characteristics of contemporary knowledge society. In other words, quality and quantity of knowledge have come to change; development of science and technology particularly represents this phase. Also, as contemporary originality knowledge has certain economic role in regard to not only one of the sources of power, but also of wealth (Weert, 1999: 52; Hasson, 2002: 41; Drucker, 1993: 87, 306-307). Moreover, this paper adds increase of the activities to produce knowledge as core particularity of knowledge society as mention below (Gibbons et al., 1994; Nowotny et al., 2001).

Based on these general characteristics of knowledge society, this article grasps knowledge society in terms that knowledge defines and organizes society in plural dimensions. According to N. Stehr knowledge is one of the powers to organize society: 'Knowledge is both a constant source of change and a principle of social organization. Knowledge societies offer unprecedented means to empower social actors to add to the self-transforming capacity of society' (1994: 230-231). In other words, in knowledge society various actors have possibilities to organize and transform society through knowledge. Stehr defines knowledge in knowledge society as "immediate productive force"; this force is not only related with economic production, but also political and social production. Knowledge taking the forms of data and theory or data and program functions to produce such as law, policy, planning directly; and they work to organize society. In this sense, society is not organized by laws of nature, but is constructed and transformed by laws of secondary nature; especially this secondary nature has certain relations with science and technology or knowledge (Stehr, 1994: 102-103). For example, the education reform has undertook in Japan, although it has had long history, has defined and organized through arguments and reports as accumulation of knowledge at conferences such as *Chuo Kyoiku Shingikai* (Central Education Conference) and *Kyouiku Kaikaku Kokumin Kaigi* (National Conference on Education Reform). This condition means at these conferences theories

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society in which knowledge organizes the social.

and data or program as knowledge have functioned to define and organize system of education and such as curriculums as secondary nature. In this sense, knowledge can be grasped as organizing factor of society. This paper defines this phase of relation between knowledge and society as one of the core elements of knowledge society.

## 1-2 What is knowledge

It is necessary to ask what knowledge is and means in arguing knowledge function to organize society. First of all, the general level of the definition is explored. 'Knowledge is the result of successful cognitive efforts to enlarge, fill up, systematize, and improve the rational experience about human and nonhuman reality. Knowledge is both a portrayal of reality and an array of social activities' (Milic, 1990: 165). Also, knowledge can be defined as '*any and every set of ideas and acts accepted by one or another social group or society of people ideas and acts pertaining to what they accept as real for them and for others*' (McCarthy, 1996: 23 emphasis original). In other words, knowledge is matter including action to be shared as a result of activities to cognize or grasp realities. In this broad framework, the following types of knowledge are included: knowledge such as people's cognition or understandings and instrumental knowledge such as science and technology. It can be said that the former has more affinities with cognition, and the latter has more affinities with actions or instrumental dimension<sup>2</sup>.

More detailed classification can be made. G. Gurvitch divides types of knowledge into seven as follows:

1 Perceptual knowledge: the collective knowledge to grasp world constituted by time and space.

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<sup>2</sup> As similar concept, information needs considering. Though the boundary of the both concepts: knowledge and information, is very ambiguous, one can distinguish in following points. Information means mostly facts based description or mass of data which comes and goes. It does not have relevance without being put meanings or interpretation by receiver. And people need to make interpretation of information; and at that point the framework of interpretation is none other than systematic knowledge, some argue (Egashira, 1998: 57-58; Nyhan, 2002b: 25). Brusoni distinguishes data, information, and knowledge in following sense. According to him, data means arranged signs which appear from observation or intuition which function as raw material to produce all of information and knowledge. Information means collected, sophisticated, and structured data. And knowledge means the ability to make decision by using information (2002: 9-10). Nyhan says the hierarchy of data-information-knowledge exists, by putting knowledge top of it. The particularity of knowledge lies in its feature of cognitive framework or reflexivity on knowledge itself (Delanty, 1998b: 110-111). It means knowledge has more systematic features with certainty than information or data. As one can see from the definition of knowledge to be shared, it has amount of certainty (Hasson, 2002: 39-40). Also the most important feature to distinguish in the context of this paper lies in cost of production. Namely, to produce knowledge requires much more intellectual, economic, and human capital than information production; without such abilities and capital knowledge production might fall into malfunction or might lead to knowledge without certainty (David and Foray, 2002: 12-13). It is rather easier to create information through description of facts or collection of data, however, to generate knowledge requires more and more capital and systematic methods especially in forms of science and technology. In these senses, this paper distinguishes knowledge and information.

- 2 Knowledge of others: this knowledge function in order to create 'we group' in contrast to the emergence of others.
- 3 Common knowledge: the knowledge on shared social conditions which make daily life sure. This knowledge has affinity with custom or such.
- 4 Technical knowledge: the knowledge to dominate nature, to produce, and also to govern the social order.
- 5 Political knowledge: the knowledge to support strategic actions in order to achieve particular interests of social groups. Sometimes it functions as ideology.
- 6 Scientific knowledge: it is regarded as value-neutral and is conceptual and empirical one orientated toward openness, wholeness, and accumulation.
- 7 Philosophical knowledge: the knowledge integrate those knowledges mentioned above into universality and the very basic one for recognition. (Gurvitch, 143-156)

His classification seems via categories or fields. If one more category is required, that is sociological one.

- 8 Sociological knowledge: the knowledge to understand societies has sometimes revealing function of arbitrary power relations (Barger and Kellner, 1987: 6, 8-9; Bourdieu, 1991: 27, 36).

By these classification one might be able to comprehend knowledge changes its characteristics in accordance with contexts or conditions to be used. Cognitive activities can lead to understanding of others and on the other hand to support of strategic action based on contexts.

While, V. Milic classifies knowledge via function axis. He sorts knowledge into practico-technical knowledge, socio-integrative thought, and world-outlook and self-consciousness. According to him, experiences, knowledge and skills constitute practico-technical knowledge, which function as instrument to reach settled aims (Milic, 1990: 167). Socio-integrative thought has roles to achieve social integration. It works to integrate social groups including various races, ethnicities, and classes or hold social collectivity in order to make society function. In broad sense, it functions to socialize people through such as language acquiring; in narrow sense, it functions to preserve existing order and stability (Milic, 1990: 170-171). World outlook and self-consciousness as knowledge have interrelations and function to form how a cognitive subject cognizes society or world and oneself (Milic, 1990: 174-175). Seeing like this, one can define knowledge in terms of function.

By seeing these categorizations and classification, this paper settles two broad categories. First category of knowledge is "cognition of reality" or "comprehension of reality" including mostly perceptual knowledge; philosophical knowledge; knowledge of others; common knowledge; sociological knowledge; and world outlook and self-consciousness as knowledge. This dimension of knowledge has certain relations with how people or group having such knowledge cognize and comprehend world and themselves. This paper grasps this dimension of knowledge as "cognitive knowledge," focusing on cognitive functions. Second category of knowledge is

“instrumental knowledge” including mostly technical knowledge; political knowledge; scientific knowledge; practico-technical knowledge; and socio-integrative thought as knowledge. This dimension has certain relations with how one achieves aim technically (cf. Habermas, 1975). This paper grasps this dimension as “technical knowledge” or “instrumental knowledge.” Of course each knowledge have diverse features; political knowledge can function to create cognition or comprehension, on the other hand, knowledge of others can function instrumentally. Noticing this limitation, this paper settles two broad categories to grasp knowledge.

In addition, two more characteristics of knowledge needs considering for this article. Firstly, knowledge has certain relations with power and authority, because knowledge often becomes one of the main sources of legitimacy. Especially, knowledge can put relevance on various matters labeling “it can be thought as scientifically correct.” Put in differently, those have power or authority can define what kinds of knowledge have correctness or legitimacy. Knowledge has had relations with truths; and one can see knowledge has come to have linkage with relevance or rationality, as a result it comes to hold power<sup>3</sup> (Swidler and Arditi, 1994: 331-332, 314-315; cf. Foucault, 1978; Stehr, 1994). Secondly, knowledge has characteristic to hold hierarchical structure among various types of it depending on social conditions and contexts. For example, in ancient Greece philosophical knowledge occupied top of the position. Those had philosophical knowledge could get admire, those topics “how to live well” or “what is goodness and beauty” were argued a lot, and those philosophical knowledge were produced. As exploring later, in contemporary society technical and instrumental knowledge taking the form of science and technology<sup>4</sup> which can produce economic wealth can be said to occupy the top of the hierarchy.

To sum up, knowledge is product of cognitive activities to grasp social and natural phenomena which can be shared collectively. Knowledge has two broad categories: cognitive knowledge and instrumental or technical knowledge. In addition, knowledge can have power and authority; knowledge has hierarchical structure among types. Referring these characteristics, this paper

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<sup>3</sup> Nash argues relations between scientific knowledge and power critically in terms of feminism. She criticizes miller model of knowledge that scientific knowledge reflect nature or social phenomena as miller and points out knowledge is tend to be situated by interests, stance, and such as subjectivity of an individual. See Nash (1994).

<sup>4</sup> This paper distinguishes “science” and “technology” as follows. Science means in general sense, system of knowledge oriented towards through based on observation and experience. However, neither is science universal nor perfect. The scientific studying methods, concepts, and conceptual relevance have been changing (Weber, 1994: 9-10). In this sense science can be defined as process to move from less relevant knowledge to high relevant knowledge (Bourdieu et al., 1994: 34). Namely, science can be grasped as process of knowledge directing to truth or objectivity. While, technology means matter to achieve aims with instrumentality. It traditionally includes the sense to manipulate object well as an artisan does. However, in modern sense, technology comes to be like blackbox which highly trained professionals or technicians can deal with (Naoe, 2001; Murata, 2001). Science and technology appeared as very different matters, however, through such as world wars, they came to be connected or fused as “science and technology.” (21c Conference, 2001). Moreover, this fused knowledge has had large influences on various social dimensions in contemporary society from health to economic growth. Then some have argued how to deal with it by public debate (Wynner, 2001) or control and rationalize democratically (Fineberg, 2001)

defines knowledge as organizing factor of society. Knowledge is, in this sense, immediate productive force which can organize society (Stehr, 1994). To see this feature of knowledge, the following section sees arguments on the realm of the economic, of the political, and of the cognitive, in each realm knowledge functions to organize society. However, before seeing these arguments, it needs exploring to see the relations between knowledge and society in contemporary social contexts. By seeing it one can get specific ideas on what kinds of subject can access to knowledge, can produce knowledge, and exert knowledge in contemporary knowledge society.

### **1-3 Relations between Knowledge and Society**

Some have argued relations between science and society have been changing. The core element of change has been told as the increase of interactions between science or knowledge and society. This change has undertaken due to various complex elements as mentions below. Before the rising of interactions, the relation has been told as unilateral vector from knowledge to society. At that time, knowledge mostly means “science as truth seeking process.” This type of knowledge had been produced mostly in university as closed system or ivory tower; and, produced knowledge had functioned to satisfy the spirit of inquiry of researchers or had applied to society. This type of knowledge has been argued as Mode 1 knowledge (Gibbons et al., 1994) or “knowledge of modern paradigm” (Tierney, 2001: 354-358). Under the logic of Mode 1 what has importance lies in disciplinary framework or legitimacy in it. From the viewpoint of the relation with society, this knowledge had tendency to enlighten society via disciplinary truth one-sidedly (Delanty, 1998a: 5). Namely, knowledge did not have much sensitivity towards voices from society. Of course, this kind of tendency remains in university even now.

However, in accordance with social transformation, the relations have been changing. Change has various dimensions, however, this article focuses on the phenomenon ‘society speaks back to science’ (Gibbons, 2000: 160-161; Nowotny et al., 2001: 1-2). To say simply, the interactions between knowledge and society have come to increase largely. Science as knowledge now has sensitivity for applications or for social demands. Some argues this type of sensitive knowledge as Mode 2 (Gibbons et al., 1994). The social backgrounds of this change consists in, firstly, spending cut of governmental sector on university because of deterioration of public finance after twice oil-shocks. As a result, it is said that university came to be required to listen to voices and demands on knowledge from society in order to manage itself independently (Delanty, 2001: 103-104). Secondly, as will mention later in detail, economic in general had been changing towards knowledge-based (Nowotny et al., 2001: 107). The transformation of industrial structure from second industry to third industry made demands for knowledge increase. In knowledge-based economy knowledge itself came to be packaged as commodity and be situated as one of the core elements of business management. Thirdly, expansion of higher education provide trained and skilled people for such as research institute of enterprise, governmental sector, and even citizen activity. This increase of the interaction has contemporary originality in terms of knowledge. Some argue the phenomena as co-evolution of science and society, due to its dynamics (Nowotny et al., 2001: 33).

This dynamic processes of interactions have boosted pluralization of actors of knowledge

production and knowledge production itself. Before the rise of dynamic trend, university had had central roles of knowledge production. However, in contemporary society more diverse actors such as enterprises, thinktanks, governmental sectors, and civil sector can conduct knowledge production. Produced knowledge reflects actors' own interests which of course have diversity (Gibbons et al., 1994; Nowotny, 2001). These features can be regarded as characteristics of knowledge and society. Based on these understandings the following sections see the dynamics of organizing power of knowledge in economic, the political, and the cognitive realms.

#### **1-4 Organizing Society by Knowledge**

In this section the core element of knowledge society: "knowledge organizes society" is explored through three social dimensions: economic, the political and the cognitive.

Of course, not only does knowledge organize society, but social contexts and conditions define or organize knowledge. According to Kido, social conditions and code system of meanings of society define what kind of knowledge has relevance and value (1990: 86-93). For example, in the social contexts and conditions in which the logic to develop science and technology in order to establish foundation of industry has certain social position, knowledge taking the form of science and technology is produced eagerly. At the same time, this produced knowledge functions to organize social conditions. Namely, relations between knowledge and society are interactive and mutually influential. The argumentation on influence of society on knowledge will be explored later; this section sees vector of knowledge to society.

##### **1-4-1 Organizing Society by Knowledge in Economic Realm**

First of all, in the realm of economy the relation between knowledge and production needs considering. According to D. Bell, society has transformed from industrial society, in which heavy industries have central position of production, to post-industrial society, in which service industries have central position. It has been said that in post-industrial society production has come to depend on knowledge-related activities and mind labor which has supported the third industry. Bell raises five points of post-industrial society as follows: 1) the rise of service industry dealing with personal, with business, with transportation, communication and public investment, with insurance, education, and research; 2) the enlargement of white collar possessing high expertise and technique; 3) the expansion of trust in and demand for the theoretical knowledge which lead to the social administration and direction of innovation; 4) the enlargement of importance of technological planning to lead development; 5) the development of new intellectual technologies which define the rational behaviour and direction of people (Bell, 1975: 24-48). Due to industrial structural change the demand for mind labor and expert has increased. Also B. Nyhan explains transformation of industrial structure. According to him, from 1970's to 1980's existing heavy industries had central roles of economy; it can be called as "old economy." In such condition, matured skills to achieve something were valued and required. From 1980's to 1990's, the transformation of industrial structure occurred, and in it appropriate capabilities or attitudes which can be applied to various fields were valued and required. Those skills and attitudes supported industrial structure changing.

Then from 1990 ' s and 2000 ' s industrial structure moved into “ new economy ” based on knowledge. In the new economy the skills to integrate explicit and tacit knowledge and know how have come to be valued. It is said that not only those have theoretical knowledge, but also those have know how to manage business, advanced technology, society and even oneself comes to be valued and required. In other words, mind labor which possesses such know how and knowledge supports new economy of contemporary society<sup>5</sup> (2002b: 18-20).

As mentioned above, this kind of economy or industrial structure which requires knowledge can be called as knowledge-based economy. That is, economy immediately based on production, distribution, and exertion of knowledge and information (Kobayashi Shinichi, 2001: 19). In this framework, knowledge has certain linkage with industrial production; to produce knowledge and to use it make some of the core elements of economy and then lead to economic development. Kobayashi Shinnichi argues knowledge society in terms of knowledge-based economy; namely, ‘ knowledge society supports this kind of knowledge-based economy and at the same time is supported by it ’ (2001: 20). Knowledge in knowledge-based economy can be divided into broad categories: knowledge related with concrete high technology product or development of commodity such as business service and knowledge related with corporate strategy who to manage organization rationally (cf. Brint, 2001: 104). In addition, the system of patent or intellectual property right occupies important position in knowledge based economy. The concrete conditions, seen below, can be said as conditions of organizing society by knowledge.

First, to develop and to invent computer software, new medicine, and such as genetic modified food mostly based on research and development or technology development have certain connection with economic wealth. In this sense, to produce knowledge means almost the same as to produce economic wealth. For example, to develop new machine to analyze or observe special materials or particles requires highly advanced knowledge. It can be said as high-tech industry. Namely, knowledge taking the form of science and technology functions as foundation of industry which is immediately connected with economic wealth. In addition, service sector such as health, education, and leisure depends mainly on intellectual capital rather than material capital. For example, in questioning what kinds of education program on English conversation can have marketability, it is know how appeared as program or planning: specific knowledge which has relevance.

Secondly, in knowledge-based economy management know how to maximize profit by rationalizing business of firm has definite importance. It means knowledge management and can be defined as follows; knowledge management means ‘ to organize infrastructures (technology or space), process, intellectual capital (contents), and inner structures (incentive, chain of command, and arrangement of team) in order to conduct knowledge production, acquisition, access, and

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<sup>5</sup> This kind of explanation is made also by A. Toffler. According to him, contemporary knowledge-based economy can be seen as the third wave of civilization. The third wave puts value on knowledge, because it can produce economic wealth. One of his original arguments lies in the concept of “ powershift ” ; namely, knowledge is very democratic source of power and wealth, because it can be available for most of people (1990: 17-20). However, as mention later, knowledge is not distributed equally, in various dimensions of knowledge inequality exists. So arguments by Toffler has certain limitation in saying knowledge is democratic source of power and wealth.

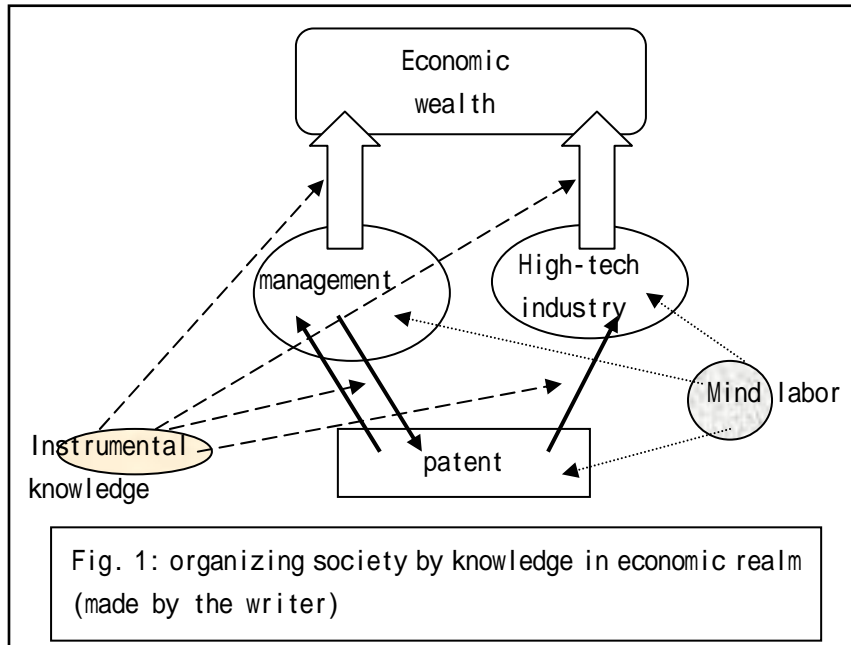
application effectively' (ラゲルス/ホルツハウス, 2001: 16). In this sense, the meaning of knowledge is not science and technology but accumulated or developed "know how"<sup>6</sup>. In other words, those kinds of knowledge are valued, which function to create business model or to establish corporate strategy making market share expand (Kobayashi Shinnichi, 2001: 20). In this realm, consulting companies, who provide such software for various firms, have been developing its scale and activities; this phenomenon can be seen as one of the core characteristics of knowledge-based economy. In fact, compared with world ratio of economic development, management consulting industry achieved almost two time more for past ten years; its annual income might reach more than 10 billion dollars (Suddaby and Greenwood, 2001: 934).

Thirdly, patent system or intellectual property right also has crucial significance in knowledge-based economy, which protects knowledge and innovation such as biotechnology or medicine and medical treatment invented by universities or large corporations (David and Foray, 2002: 18). To protect commodity or science and technology based on advanced knowledge as mentioned above occupies important position of corporate strategy and knowledge management. Put in differently, to take patent or to claim intellectual property right itself has something to do with knowledge (cf. Ootsuka, 1999; 2001; 2002; Yayashi, 2002; Nagata and Sasaki, 2002; Shouyama, 2001).

To sum up, due to transformation of industrial structure, knowledge has come to be one of the leading powers for industry. In this new economic industry knowledge appears as product or commodity itself, management know how and also patent itself or patent strategy. One can see contemporary knowledge-based economy functions mostly based on these three elements intertwined and bears economic wealth. Put in differently, these interconnected three elements related with knowledge define the realm of economy in society: namely, knowledge organizes society through economic realm. The figure 1 below shows arguments made so far.

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<sup>6</sup> See Appendix 1 for more detailed arguments on business model of knowledge production. Also see Nyhan (2002b) on know how.



#### 1-4-2 Organizing Society by Knowledge in the Realm of the Political

The second realm of knowledge society lies in the political realm in broad sense. Although “politics” make most of us think about parliament, diet, and such as party, this article grasps decision making and problem solving in terms of public matters as “the political<sup>7</sup>”. Put in differently, the activities of decision making or problem solving conducted by corporations and such as citizens can be regarded as the political matters. From ancient time human being use some kinds of knowledge in making decision and solving problem. For example, vernacular traditional knowledge possessed by a senior of community mostly had and even has large influence on decision making. The relevance of it consists in historicity or traditionality. However, in contemporary society, what has crucial influence is scientific knowledge in decision making and problem solving. In the following parts the roles of scientific knowledge are explained. Firstly, it shows the conditions in which scientific knowledge is valued. Second, the relations between knowledge and those subjects such as expert are explored; this point can be seen from broad frameworks: scientification by elite and scientification by citizen.

In contrast to traditional society, it can be said that in contemporary society “science” constitutes one of the sources of relevance for decisions and problem solving. P. Weingart uses the concept “scientification” to grasp such conditions in knowledge society. Scientification can be defined as ‘a process whereby the use of and claim to systematic and certified knowledge produced in the spirit of “truth-seeking” science becomes the chief legitimating source for activity in virtually all other functional subsystems’ (1997: 610). According to him, in contemporary knowledge society “scientification of politics” and

<sup>7</sup> In contemporary society politics does not mean only the matter related with state affairs; it covers inside and outside of the state realm. People might involve in the political realm in various levels (Saitou, 1996: 78; Mouffe, 2001: 29).

“politicization of science” simultaneously happen, although both have relation with scientification. The background of these phenomena can be said to relate with the attitude to put value on “application contexts” of knowledge. This style of science has been called as “post normal science” or “Mode 2 science”. Under the concrete contexts such as environment, health, energy, and education, ways of application have crucial importance.

Scientification of policy means that more reflexive scientific reconsideration is made on the result from scientific knowledge-based policy decision making (Weingart, 1997: 605). Also Weingart defines “politicization of science” as the process in which in claiming and creating legitimacy for policy science is made use of as assured tool from particular standpoint. Those who use this process of legitimacy creation are not only state crafts, but also corporations, thinktanks, and even NGOs. Namely, science can function to put legitimacy on policy or political advocacy, which soaked one’s own interests (Weingart, 1997: 606). Whoever, state owned sector, business sector, or citizen sector, wants to create legitimacy on one’s own claims or ideas mostly can acquire advantage by making use of scientific knowledge and data (cf. Jasanoff, 1997). In contemporary society, science as knowledge which can give certainty has definite significant roles in terms of political decision making (cf. Bell, 1975: 452).

Even in the realm of problem solving which included broader realm of political decision making, the scientification has its own roles. Some regard science with rigorous methodology and research processes as following logic: ‘it [science] was believed, could be given a direct practical application in the solving of whatever problems were encountered in nature or society. The availability of such as seemingly vast amount of new scientific knowledge, in the social sciences as well as the natural sciences, led to institutional provisions for its application to problem-solving’ (Redner, 2001: 518). This trust on scientific knowledge appears taking form of demand for scientific knowledge. For example, it has been said that social demands for expert or advanced knowledge to deal with problems have increased: how to ensure fiscal foundation through fiscal reform in order to stave off environmental destruction; how to protect workers from stress of labor; and such as how to create better circumstances for secure child raising: the problems to be solved in the realm of environment, health, communication, and such as privacy (Gibbons et al., 1994: 7; Fujigaki and Leydesdorff, 2000: 642). The more society comes to be complex, the more demands for expert knowledge expand; the demands towards scientific approaches for various social problems have increased, because scientific knowledge is believed to have certainty, to bring about predictability, and even to create concrete technology to solve problem<sup>8</sup>.

These kinds of functions of scientific knowledge in decision making and problem solving can be seen to mean knowledge organizes society in the realm of politics. In contemporary knowledge society, the matters to make decision and to solve problems in the political realm largely depend

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<sup>8</sup> In addition, not only scientific knowledge, but also know how and information works as criteria for daily decision for individuals. To decide what kind of food can be said as safe; what kind of food habits is appropriate; which medical treatment is suit; and such as what kind of lifestyle is secure, largely depends on knowledge. These kinds of choices or decision making in daily life are supported by developments and permeation of information-communication technology and diffusion of knowledge (cf. Nowotny et al., 2001: 220-221; Giddens, 1991).

on scientific knowledge. Seen from different perspective, it can be said that scientific knowledge runs or engineers society (Redner, 2001: 520; Bell, 1975: 29-30, 285).

The next important issue on organizing society by knowledge in the political realm lies in who uses scientific knowledge for decision or problem solving in what kind of relations. This paper shows the vector of technocracy, which has closed tendency to be one-sided imposing, and the vector of grassroots based citizen, which has open tendency.

In general sense, those expert and advanced knowledge in decision making and problem solving tend to be undertaken by technocracy<sup>9</sup> constituted of elite or expert. The Expert has been trained through higher education and working place quantitatively and qualitatively, consequently, technocracy possesses expert knowledge, methods to generate knowledge, and techniques to test relevance of knowledge (Fischer, 2000: 280-281 from end note). In some cases, due to such knowledge and techniques, experts can get social trust and recognition. In this sense, experts have large influence on people's life. The following kinds of questions are often cognized and judged by expert knowledge: whether GM (genetically modified) food is safe or not, what kinds of effects it might have, and such as what kinds of negative effects dioxin has (Hirakawa, 2002a: 165-166). Like this, expert knowledge has large impacts on decision making and problem solving in the political realm.

It makes large difference whether the way of dealing with expert knowledge through closed tendency with elitism or through open tendency with citizen initiative, because based on the way the sense of organizing society by knowledge in the political realm comes to change. On the one hand, the power possessing elite expert knowledge one-sidedly and might organize society unilaterally, and on the other, in open social conditions citizens also participate and exert knowledge and might organize society democratically.

The one-sided decision making by experts is not rare matter. Due to efficiency and professionalism, various matters related with people's daily life have been defined and decided by some experts. People at large mostly cannot decide and judge properly by themselves how much public spending needs for what kinds of fields of research and development and such as how far the technology of cloning or genetic modifying can be accepted socially. And attitude and cognition of scientists and experts which sometimes based on "scientism" functions as one of the reasons to exclude citizens from participation on such judgements. According to A. Irwin, those scientists and experts who put absolute value on scientificity of natural and social science tend to define themselves as superior because they possess knowledge and tend to blame ignorance or lack of knowledge of the lay people as deficit. In addition, those scientists and experts tend to have attitude to teach or enlighten ignore people. This is the argument so called "public ignorance." This cognition often takes stance that the more understanding by lay people expand, the more trust on science and technology increase (Irwin,

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<sup>9</sup> This paper defines technocracy as administrative power which has macro perspective on whole society and micro perspective to make detailed policies. Technocracy is constituted by experts as managers or administrators of society who have highly advanced and expert knowledge (Kajita, 1988: 70-71; Brunie and Bon, 1969: 105-107). Technocracy can function as power structure to determine direction of society to head to; in this sense, scientists, professors of university, tops of corporations, and politicians and bureaucrats form it.

995: 26). This logic of deficit model regarding public as ignorance might lead to following stance and logic: if one wants to join the processes of decision making or problem solving, then he or she should comprehend and acquire scientifically “right knowledge.” In other words, the pressure that ‘if you have discontent, first understand, then say something!’ has certain status in the model (Hirakawa, 2001a: 198-199). The scientifically “right knowledge” might mean those settled by scientists and experts (Hirakawa, 2002a: 167-168).

This technocratic way of knowledge treating has assured position in decision making and problem solving. For example, the four fields of science and technology to be invested intensively: life science, information communication technology, environment technology, and nanotechnology, were defined by science and technology basic plan and arguments by *Keidanren*, without involvement of people at large. Even the budget depends on tax of people. Namely, technocratic way of defining society via knowledge has certain influence and realistic sense.

This approach has mainly two problems. Firstly, technocracy can manipulate arbitrary various elements through expert knowledge which people mostly do not comprehend. For example, “risk” can be generated and extinguished by those have expert knowledge on purpose. It can happen not to take action in spite of possible danger or risk, actors claiming scarce of data, information, or knowledge. On the other hand, it also can happen to “create risk<sup>10</sup>” arbitrary by claiming possible danger of the matter (Fischer, 2000: 103; Eden, 1999: 1303). Also it has certain influence to say there is not that much risk by referring to scientific data or knowledge. For example, to put intensive or accidental on the side so called mad cow disease had told based on scientific view points that the risk of human infection was rare, and many people accepted this idea (Kobayashi Shinji, 2002c: 17-18). Like this, by claiming “it is scientifically proved” the risk can be manipulated intentionally. When the risk accessing is conducted behind closed door by technocracy: namely, without verifiability, it cannot be helped that the credibility of the access might have doubt. Secondly, even experts or professionals make mistake; it is illusion to believe experts do not make mistake and guarantee almost perfection. Scientists and experts are also in power relations or in collective weir; they do not necessarily have higher rationality than lay people (Kobayashi Shinji, 2002a: 119). For example, the explosion of space shuttle Challenger, AIDS stem from misuse of unheated blood medicine, and such as Minamata disease were tragedies happened instead of the insistences of secure via scientific knowledge (Mastumoto, 2001). Technocracy does not necessarily credibility in itself. Seeing these arguments and critics, reader might ask, then, ‘what can have credibility?’ What is crucial lies not in seeking of perfect scientificity or zero risk,

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<sup>10</sup> Eden analyzes the logic of justification by some business sectors via the idea ‘this is scientifically right.’ In his arguments, business sectors of British environmental fields have claimed their superiority in terms of scientific knowledge and information; namely, they have said they have had appropriate idea in terms of proper regulation on environment. Even governmental sectors have consulted on such scientific knowledge to settle regulation on corporate activities. The point lies in scientificity and technocratic rationality used by business sector; they are in black box and do not have legitimacy automatically. Under such conditions, voices of NGOs and such actors have been treated as emotional and non-scientific, as a result those have been excluded from the negotiation processes. However, the claims based on technocratic rationality and scientific knowledge might have arbitrary sense through business interests, it can be said (1999: 1298-1304).

but in listening to various ideas and voices including those from citizens with sense of daily life. The reason is that by taking citizens' ideas and local knowledge into account, the possibilities emerge to have convinced sense to be influenced by science and technology and the attitude to live with risks with consent. Put in differently, the problem lies in the closed attitude of scientists with the idea of public ignorance; what is needed is to make open circumstances and public discussions to deal with topics (Hirakawa, 2001a: 205-206).

In knowledge society, on the other hand, those movements which relativize the technocratic way. One of the movements has been held by citizens who can be defined as social subject of right to create society; citizen expertise or professionalism has possibilities to involve in decision making and problem solving. Schutz defined this kind of active actor as "well-informed citizen." According to him, such active citizens acquire knowledge, skill, and ability and make discussion to deal with their concerning issue (Schutz, 2000: 156, 162). This kind of active citizens have emerged taking the forms of grassroots movements, NGOs, NPOs, and various networks, who try to involve and actually involve the processes of decision making and problem solving with knowledge (Sakurai, 2000: 61-65; cf. Stehr, 1994: 243, 258-259; Hirakawa, 1999; 211; 2002a; 2002b; Takagi, 1999). Some might argue those actors are too much emotional and lack of appropriate knowledge like the logic of public ignorance, however, such arguments fall into over simplification. It can be said that local knowledge and citizen expertise might function well in the processes of decision making or problems solving<sup>11</sup> (Kobayashi Shinji, 2002a: 124-125; Irwin, 1995: 112; Fischer, 2000, esp. chap 8, 9, 10).

One of the main different points between technocratic way and citizen way of treating knowledge is not to regard expert knowledge absolute, but to respect open conditions, diversity of opinions, and attitude for critics and to include local knowledge. Although these arguments might seem abstract or ideal for some, in reality some trials have emerged in contemporary society: "Participatory Technology Assessment: PTA"; "consensus conference" as one type of PTA; "community based research: CBR" developed in the U.S.; and such as "science shop" in which citizen experts create and use knowledge (Hirakawa, 2002a: 169-170). Talking about consensus conference, Japan held "consensus conference thinking about genetically modified agricultural products" in 2000. At this meeting, it is said that "the opinions and suggestions of citizens" was made and had influence on experts, then as a result of the conference the research program on "effects of GM crops on environment" emerged (Kobayashi Shinji, 1999a: 159-163; 2002a: 128-144; Hirakawa, 2001a: 195-196; 2002a: 196). Most important trial in terms of citizens' knowledge using seem science shop. To see the citizen side of knowledge creation

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<sup>11</sup> For example, at the repair work of Yasaka river of Ooita prefecture in Japan, it is said that the commission on influences by repair work, constituted of experts, failed to absorb local knowledge of local residents. Governmental side claimed damage by flood tide might not happen, referring to new scientific data, however, local residents have known the possibilities of flood tide with "experience knowledge" or "local knowledge." They had experience of high tide in 1998 and habits to raise tatami (Japanese traditional mat) as counter measure of it at early summer. Although non scientific, these local and folk knowledge, wisdom and such as oral tradition have assured significance even for decision making and problem solving (Kobayashi Shinji, 2002a: 126-127). Also see Kouno et al (1999), Fischer (2000), Whynn (2001; 2002) about the arguments on the knowledge gap between experts and local residents and on experts' possibilities of incorrect.

and using as one of the core elements of this paper, science shop needs to be considered in details. Science shop can be said like “consultation office of science” for people at large. Hirakawa introduces it as ‘science shop can be defined as follows: “it replies for the worries of civil society and provides research supports based on citizen participation.” If university has basis for it the research actors are mainly students under the director of professor, and projects of research and development are mostly included in class and research for graduation’ (2002a: 169). Various actors bring consultation to science shop: environment protect group; support group for disabled; labor union; and also individuals. The main needs of those actors can be classified into (1) to “strengthen their own arguments and evidences” via counter-expertise in order to negotiate with governmental and corporate expertise; (2) to “expand knowledge” of citizen group in order to change conditions, or status quo with active involvement in processes of changing society and environment; (3) to “change perspective” for prevention of problem rising and counter measure towards existing problem for the sake of better environmental and social conditions. Science shop functions to reply and contribute towards these kinds of social needs. Some of the merits of science shop lie in that active participation of citizen groups in public discussion with scientific knowledge utilized might help formation of civil society and that researchers can produce socially sensitive knowledge for actual utilization, because they need to respond to the demands from society (Hirakawa, 2001b: 1234). Moreover, citizens do not merely receive knowledge from experts, but actively involve in the processes of research and study with professionals (Hirakawa, 2001b: 1235; Irwin, 1995: 156-157). In this sense, the trial of science shop can be seen as the dynamics of knowledge by citizens in the realm of the political. It differs from technocratic way of treating knowledge; it has more local knowledge or sense of daily life orientation and has affinity with open discussion. These core features might be shared with CBR and consensus conference.

In the context of knowledge society, in accordance to qualitative and quantitative expansion of knowledge, in the realm of the political, on the one hand, technocracy organizes society by highly advanced knowledge in closed circumstances, and on the other hand, citizens acquire counter-expertise and participate in the processes of the political. What is crucial is that society might be organized through negotiation or articulation of various ideas and opinions made by those actors in public space (Hirakawa, 2001a). Kihara argues this point; what is important consists in that to bridge the gap of aim to use science and technology between experts and lay people. Moreover, it is necessary to consider how to use and deal with science and technology from the perspective of “commonality of society” (2002: 73-80). Namely, it means that scientists and citizens use science and technology not for the sake of their own narrow interests, but for the sake of commonality of society or to make solidarity in the society as sphere to live together. From such stance and perspective the aims of science and technology need to be settled. This process must have open feature, therefore, technocracy cannot define the aims one-sidedly. The aims will be generated through communication processes between experts and citizens. This can be seen as “democratization of knowledge” (Delanty, 2001:5). In addition, the stance of this paper has affinity with the dynamics of citizen knowledge activities.

To sum up, in the realm of the political, on the one hand technocracy or elite make decision

and try to solve problems by expert knowledge under closed and unilateral conditions, and on the other hand, citizens try to involve the processes of decision making and problem solving with open conditions. In both approaches, knowledge including both expertise and local knowledge function as one of the core sources to organize the realm of the political and even society.

### **1-4-3 Organizing Society by Knowledge in the Realm of Cognition**

The most fundamental dimension of knowledge organizing society might be “cognitive”, because the cognitive style of knowledge has assured relations with social level of cognition. Put in differently, the transformation of cognition via knowledge might lead to social transformation. For example, ecological cognition can be said to have certain impacts on some social orientations towards ecological society. To comprehend this argument, firstly, the consideration on knowledge and cognitive structure is explored through the frame of argument by G. Delanty. He distinguishes “knowledge as cognitive structure”; “cultural model”; and “institutional framework” in thinking about knowledge. According to him ‘.....knowledge refers to the cognitive structure of society in its cultural and institutional forms in so far as this relates to learning mechanisms’ (Delanty, 2001: 18). Namely, he grasps knowledge mainly as cognitive structure of society. And this cognitive structure has relations with cultural mode as deeper level of cognitive structure. Cultural mode means ‘the interpretative models by which a society gains knowledge of itself and offers objective frames of reference.....’; namely, ‘rationality, imaginary significations, cultural value spheres, such as those of morality, religion and art, and historical narratives’ (Delanty, 2001: 18). This cultural mode has strong connections with structures of cognition, norm, and aesthetics, as he says. And he also says cultural mode is more comprehensive than the mode of knowledge (Delanty, 2001: 18). It can be said that in this broad system of meaning the cognitive structure of knowledge is largely influenced. The framework of social institution has linkages with mode of wealth production and accumulation, population, social relations, and such as regulation of government in society. In other words, ‘The institutional framework concerns social practices that make up the economic and political structures of society as well as the social institutions of the life world’ (Delanty, 2001: 18). These three elements are intertwined and have certain effects on cognition of society and people at large in society.

The reason the argument made above has significance for this article is it explains knowledge has deep relations with cognitive structure of society. It means that knowledge organize society through cognitive structure of society, because the structure has large influence on how to produce wealth, how much to invest in which field, and such as what kind of cultural model to be accepted. Of course, social conditions affect the mode of knowledge itself, so the relations between society and knowledge as cognitive structure has interactive feature.

Not only does Delanty argue such matters, but also A. Touraine argues the role of knowledge as cognition in society through making the framework of “self-production of society.” To see his arguments helps to comprehend cognitive dimension of knowledge and its relation with society. Although abstract argument, he says society has its own cognitive framework to understand society itself. The social stock of knowledge might consist of the framework. This

framework has linkage with the concept of “historicity,” according to Touraine.

Inventor of knowledge, agent of investment, creator of an *image of creativity* that I term a *cultural model*, society produces itself, imposes a meaning on its practices, *turns back upon itself*. It does not possess a history only; it possesses historicity, which is the capacity to produce its own social and cultural field, its own historical environment.’ (Touraine, 1977: 16)

Historicity defines a way of ‘self-production of society’; it determines how society to be. The constitutive elements of historicity are “cognition,” or “epistemology,”; “investment” and “cultural model”; through the function and dynamics of these elements society works on itself (Touraine, 1978: 9-10). Each element needs to be explained. First, the “way of cognition” means how society recognizes and grasps itself. He defines it as: cognition, or model of knowledge ‘is fundamental because it manifests most directly the human capacity to create though knowledge an image of the world and social relations and an image of the nonsocial’ (Touraine, 1977: 18). It means that cognition at social level has strong influence on each individual to have what kind of world outlook. It has overlapping elements with the arguments of Delanty. Second, the “way of investment” means how and on which fields society invests its own resources; this way is mostly limited by shared meanings of the society. If a particular field can be regarded socially as worth investing, then society invests its resources on the field and tries to expand and accumulate wealth in it. Third, the “cultural model” means kind of vision or model toward which a society directs itself: the way of self production. In other words, it is the system of meanings (Touraine, 1977: 18-19; Sugiyama, 2000: 34-36). Namely, the constitutive elements of historicity: way of cognition, of investment, and cultural model define how society to be. In addition, one of the crucial points of Touraine’s arguments for this paper lies in that the historicity is not stable but dynamic in accordance with struggles to work on it taking the form of such as social movements. Take it differently, actors can have negotiation influence, be it through knowledge, to determine how society produce itself<sup>12</sup> (Touraine, 1977; 1978). So, one of his concerns lies in social movements as contestation. These arguments are the parts of basic frameworks of Touraine<sup>13</sup>.

If this paper takes his framework from its own concern, the idea of historicity helps understanding the importance of knowledge in a society, because those three elements have deep relations with knowledge especially as cognition. Namely, although Touraine does not explain the interactions and interrelations of these three elements, accumulated knowledge as cognition might influence on ways of investment and models of culture. The reason is that the very basis of human or social practice can be regarded as cognition, or consciousness. On the one hand

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<sup>12</sup> According to him, in our era, the meta-reference of society had been declined or even diminished. Therefore, constant reorganization through historicity has had meanings (Touraine, 1977: 243-249).

<sup>13</sup> Seen critically, Touraine supposes single historicity in a society; however, in reality, in a society there can be plural ways of cognition, investment, and even culture models. This paper takes the stance to admit plural historicities; society might produce itself through articulations of historicities. The basic idea of the articulation will be mentioned in Chapter 2.

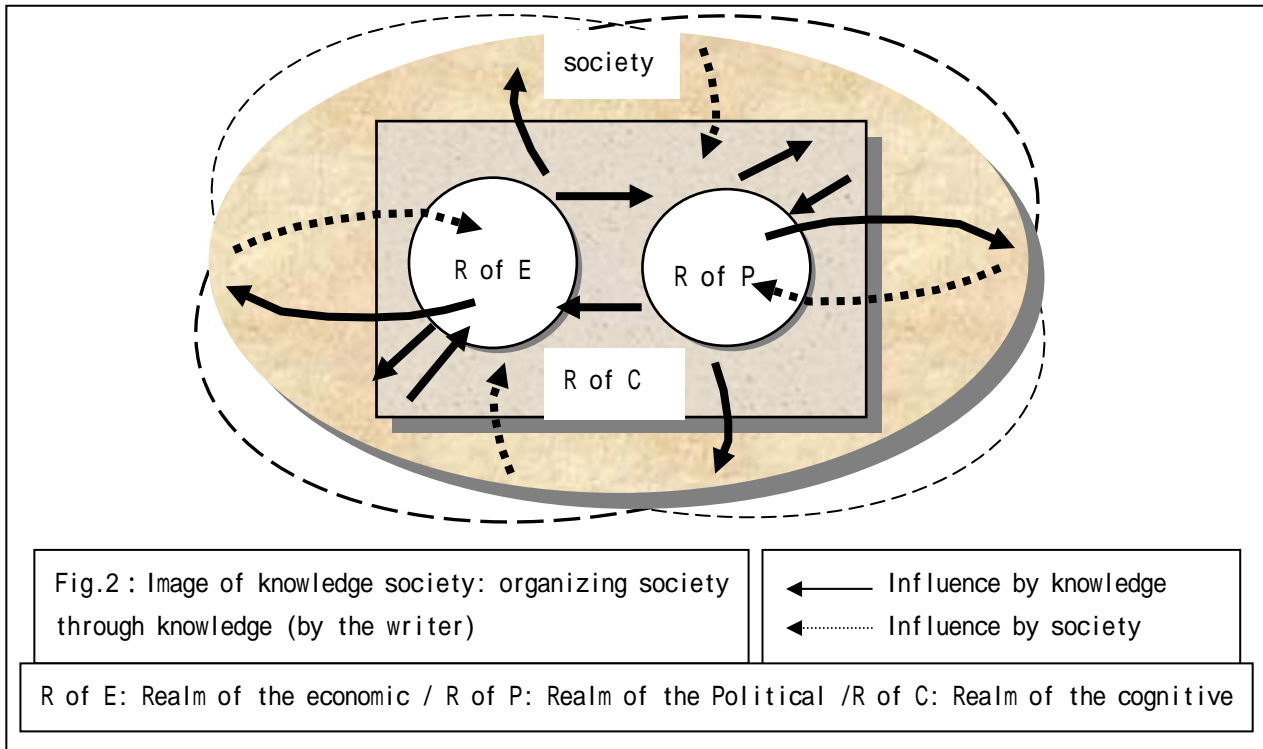
one tries to generate economic benefit through knowledge, since he or she might have certain cognition to value benefit, on the other, one tries to criticize such benefit centered attitude and even create alternative social arrangements. One of the most important elements for such practices is cognition mostly related with knowledge, although, of course, social and personal situations and such as unconsciousness can have influence.

To sum up, in the realm of the cognitive, knowledge functions as social structure of cognition. Such knowledge has certain influence to define how society cognize itself and conduct self-production. This dynamics of society might be influenced through cultural model, frameworks of social institution, and such as mode of investment. In a word, knowledge as social cognitive structure effects on and organize each realm and even social self-production. One of the important particularities of this frame of arguments in this article lies in various actors can articulate or negotiate this realm via producing knowledge as cognition. In addition, what SCKP as central concept of this article mainly focuses on is arguments of this cognitive dimension.

### **1-5 Short Summary**

So far this section has argued the core element of knowledge society for this article through organizing society through three realms. In the economic realms, the way of production has been changing into knowledge centered. In this sense, contemporary society can be said to have knowledge-based economy. In it knowledge performs to generate economic wealth. The form of knowledge in this realm mostly instrumental to achieve objectives represented by science and technology. In the realm of the political, scientific knowledge has had certain power in terms of decision making and problem solving, because scientific knowledge can be one of the main sources of legitimacy. The organizing of society by knowledge in the realm of the political has mainly two ways: from above by technocracy with closed conditions and from below by citizen with open conditions. In this realm the main knowledge might be instrumental to achieve aims. And, in the realm of cognitive, the cognitive structure of knowledge has had certain power to define how society to be. How society cognizes itself has had certain linkage with which direction society goes on, or with historicity using Touraine 's concept. The social level of cognitive structure, of course, has large influence on individual level of cognition. In this realm knowledge mainly means cognitive knowledge instead of instrumental.

These realms can be said to be intertwined and interactive, instead of independent completely. Among them, as Touraine mentions, the cognitive dimension has fundamental position, because according to the cognitive dimension values or meaning of investment in the realm of economic and those of decision making and problem-solving might change. The figure below these interactive relations of these realms. The social dynamics is represented by broken line; society transforms and even is organized through the influences and functions of knowledge. As mentioned above and will mention latter, society also has influences on knowledge; this dynamics is represented by broken arrows.

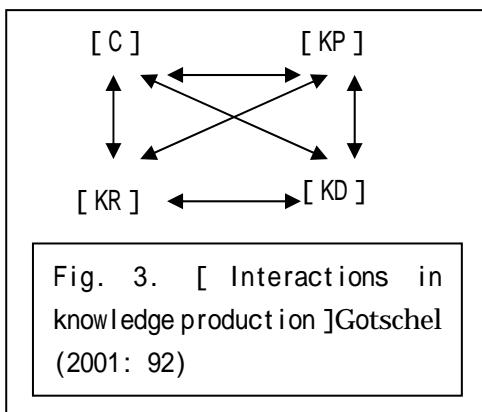


Seeing the arguments made above, one might be able to comprehend that in contemporary knowledge society, knowledge has assured importance in mainly three realms and organizes society through these realms. One of the particularities of today’s conditions lies in that various actors can actively produce knowledge as organizing factor of the social. Following section argues these activities defining as knowledge production.

## Section 2 Knowledge Production

### 2-1 What is Knowledge Production

In thinking about knowledge society, it is necessary to think about the activity to produce



knowledge: “knowledge production,” because such produced knowledge might function to organize society as mentioned above. This part considers the framework of J. Gotschel on knowledge production and thinks about factors leading to “creativity” as very basic element of knowledge production<sup>14</sup>. The factors are dialogue, research and study, and also research and development.

First of all, the framework of Gotschel is explored. He defines knowledge production: KP or

<sup>14</sup> See appendix 1 showing business sector’s model of knowledge production.

knowledge generation as dynamic interactive processes. The processes consist of activities: “creativity: C”; “knowledge diffusion: KD”; and “Knowledge realization: KR.” At the same time, each activity brings about “produced knowledge”; “diffused knowledge”; and “realized knowledge” as products. Among them the most important and central element is none other than creativity, he says. Influenced by other elements, creativity is the fundamental source of knowledge production (2001: 92-93). The figure 3 shows the interactive feature of knowledge production.

Knowledge production means to produce new knowledge; knowledge diffusion means to transmit produced knowledge to another actors; and knowledge realization means knowledge comes to be included into institution or system of society in broad sense. Then, what does creativity as fundamental element mean? According to Gotschel creativity has three dimensions. First dimension is “creativity and contexts of the areas internal and external to the neural (neuronal) system.” It means that creativity emerges when neural as information processing system deals with various information, representation, and sign. Second dimension is “creativity and contexts of disciplinary and inter-disciplinary science.” It means that creativity emerges through the horizontal interactions among plural scientific disciplines. And third dimension is “creativity and contexts of the natural, the symbolic and the virtual.” It means that creativity emerges through socio-cultural contexts (Gotschel, 2001: 94). Based on these understandings, he defines creativity as “implicit or sub-symbolic knowledge” or as “implicit or sub-symbolic knowledge generation (knowledge production)” (Gotschel, 2001: 94-95). Put in differently, creativity means that due to various existing information and knowledge and to interactions of contexts and creativity make hidden perceptions or variables newly appear (Gotschel, 2001: 95, 99). In this sense, knowledge production, putting creativity center, has innovative feature in its essence (Honda, 1998: 15-16).

The concept of innovation, near concept of creativity as core element of knowledge production, needs further consideration. The “innovation” can be defined as follows: ‘to make unmanageable object manageable or to perform different operation on particular object through combination of plural different knowledge on the operation of the object’ (Itou, 1993: 104). In other words, innovation means to enable the object to manage and deal with and to create new product or process (Nyhan, 2002b: 28). The creation of concrete products can be called as “product innovation.” For example, it means to newly create watch, computer, new model car, and such as fair trade coffee as product. On the other hand, the creation of concrete processes can be called as “process innovation.” It means the new process creation which enable to produce the same products with high quality with efficiency and productivity. For example, it means the development of business model. Toyota’s *Kanban* method and just-in-time system changed the process of producing car into more efficient and productive (Shibata, 2002: 6-8). A kind of business model: “fair trade” has changed the process of trade into fairer in relations with people and producers of so called third world countries (Minnny ed., 2001). In addition, the processes of decision making and problem-solving in the realm of the political can be the object of innovation. Referring to these arguments on innovation, this paper grasp what are produced through knowledge production with innovation are not only concrete products and processes, but also meanings, value, and cognition. For example, the creation of meanings,

values, and cognition such as fairer trading relations with developing countries, enrichment of social welfare, and preservation of environment, can be performed through knowledge; and, when it has new elements, then it has innovative feature (Teramoto, 2001: 1-10; Wakuda, 2001: 197; Rulani, 2001; Lurani and Colsani, 2001).

Based on these considerations, this paper defines knowledge production as intellectual activity to produce product, process, value, and cognition. In other words, though what is produced through knowledge production is none other than knowledge, produced knowledge takes forms of actual product, process, and also values and cognition. The produced knowledge as product and process has affinities with instrumental knowledge defined already, because in making product and process technological and instrumental knowledge is often required, and sometimes such knowledge itself can be product and process. Management knowledge in dealing with fair trade and knowledge and know how on such as distribution and customs clearance is mostly technical knowledge. Also knowledge in the realm of the political functioning in decision making and problem-solving is almost instrumental and technical knowledge. On the other hand, value, cognition, meaning and perspective have affinities with cognitive knowledge defined already, because those elements have something to do with the dimension of knowledge to cognize or grasp world and oneself. In making these new or innovative elements, what is required is evidently "creativity."

Although argumentation by Gotschel explains the fundamental element of knowledge production lies in creativity and does creativity is depend on various elements, ' interactions he does not mention the activity to generate it in details. Creativity cannot emerge automatically. This part grasps creativity generating activities as "dialogue<sup>15</sup>" ; " research and study " ; and " research and development. " According to Nonaka, one of the famous intellectuals on knowledge management of corporation arguing knowledge creation and production, fundamental activity to generate creativity consists in face to face dialogue. He defines dialogue as follows: ' true dialogue is undertaken through mutual respect and cooperation with good faith. Dialogue has something to do with life. Therefore, trust is inevitable for true dialogue ' (Nonaka, 2001: 75). Through this kind of trust based dialogue, various ideas and opinions come to be exchanged, and then creativity can emerge via such as new discovery. The dialogue might function in the processes of " research and study " and also " research and development. " Research and study has main roles to provide new frameworks of understanding and to accumulate various understandings. Through trying to comprehend the causal relations of social phenomena and meanings of them by using knowledge, information and data, research and study generates new frameworks of understanding and redefines existing frameworks (Barnett, 200a: 143-144; cf. Schwarz and Walker, 1995). In this sense, research and study brings about creativity. In addition, this intellectual activity can be said to have affinity with cognitive dimension of knowledge. On the other hand, research and development has roles to produce new actual products

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<sup>15</sup> See Gardiner (1996a; 1996b); Lash (1996); and Haan (1983) in terms of the concept of dialogue itself. These arguments grasp dialogue not as activity has orientation towards consensus but as activity keeps differences and transforms actors' perspective through interactions with mutual respect.

or materials by using knowledge, information, and data. This concept is often used in terms of economic contexts in terms of producing mainly actual products (Hayashi Takushi, 2002; 2001; Otsuka, 1999; Itou, 1993). In this sense, research and development also has something to do with creativity. These activities: dialogue, research and study, and also research and development sometimes cannot be distinguished clearly. Research and development might include research and study and vice versa. And dialogue has relationships with both activities as important factor. However, dare to simplify research and study has affinity with cognitive knowledge and research and development has affinity with instrumental knowledge. Table 1 shows these arguments on knowledge production and creativity.

【Table 1: knowledge production and creativity】(Made by the writer)

Knowledge production	
Creativity through dialogue	
Creativity through research and study	Creativity through research and development
Cognitive knowledge	Instrumental knowledge
cognition / new framework / redefinition of framework etc	new product / process / software etc

So far this part considered knowledge production itself as concept. To say briefly knowledge production means processes to produce something new knowledge through dialogue, research and study, and research and development. Produced knowledge emerges taking forms of actual products, processes, and even cognition or perspective. As already mentioned, it is said that in contemporary knowledge society various actors can involve in knowledge production; it is not confined to university as ivory tower. If various actors conducted knowledge production as some argue, then the forms of organizing society might be very diverse through articulation or negotiation of various interests and knowledge. Based on these understanding next sub-section will see knowledge production through actual actors level: state owned sector, business sector, university, and also thinktanks as part of a citizen sector in terms of contemporary Japanese contexts. The main reason to see these actors lies in that these actors are the most active actors of knowledge production in the sense of investment and actual activities. Put in differently, through seeing these actors one can grasp the dominant situation of knowledge production in contemporary Japanese society.

## 2-2 Large Stream of Knowledge Production in Contemporary Japanese Society

This sub-section sees actual level of knowledge production which has been argued as pluralized and diversified. At below, what kinds of knowledge production are performed by each actor is shown.

## 2-2-1 Knowledge Production at State Owned Sector

This sub-section tries to grasp how state owned sector regard knowledge, what kind of knowledge it puts importance, and how to perceive knowledge production. As resource documents this article uses Omi Kouji “Kagaku Gijutsurikkoku Ron [ Science and Technology based State Standing ] ”, who has worked on Science and Technology Basic Law as a council member; 21 seiki no shakai to kagaku wo kangaeru kondankai [ Conference on Society and Science of 21c ] (at below 21c Conference) ‘ Shakai to tomoni ayumu Kagakugijutu wo mezasite [ Towards Society Going with Science and Technology ] ’ (report); ‘ {2nd} Science and Technology Basic Plan ’ (at below Basic Plan). These texts mostly represent what kind of ideas and opinions the state owned sectors have and reflect on actual science and technology policy in Japan. Especially the influence of Basic Plan has been not small. At below, this sub-section explores the following points: “ how to grasp knowledge ” ; “ what kinds of knowledge are valued ” ; and “ how to think to conduct knowledge production. ”

### “ How to Grasp Knowledge ”

Although knowledge can be grasped variously depends on contexts, Japanese state thinks about knowledge focusing mostly on science and technology. In article 2 item 1 of the Basic Law the relation between knowledge and science and technology is mentioned as:

S&T [ Science and Technology ] shall be actively promoted in harmony with human life, society and nature with the recognition that the creativity of researchers and engineers (hereinafter referred to as "Researchers") can be fully developed, in consideration of the fact that S&T provides the basis for the future development of Japan and human society and that the accumulation of knowledge on S&T is the intellectual asset common for all mankind. (Basic Law)

It means that science and technology is situated in the broad framework: knowledge, and they are regarded as intellectual asset to lead to social development. This kind of perception can be seen in the Basic Plan also.

Omi, involving to create Basic Law argues knowledge as that science and technology and related knowledge with it have various usefulness. According to Omi ‘ many new knowledge produced through R&D of science and technology can be used for various problem-solving activities and can become resource for new industry, products, and services. Moreover, it becomes foundation and asset which are inevitable for creating next important new science and technology ’ (1996: 42). In his view knowledge is grasped as instrument for problem-solving and new creation of products and services. In addition, knowledge through science and technology comes to be accumulated as intellectual asset. These views on knowledge by state owned sectors represents the tendency they have to regard knowledge mostly as science and technology.

This kind of perception on knowledge has social and historical contexts. Firstly, it is said that Japanese policy needs to change from “ catch up ” to “ front runner. ” Japan had tried to catch up advanced Europe and the U.S. from devastative conditions after war to the era of high economic growth; science and technology had been under the logic of catch up. Having

achieved high economic growth and having had certain economic foundation and science and technology foundation, Japan now needs to change the stance on science and technology policy, some have argued. Namely, in order to actualize social vitality and enhancement of people's life level, Japan needs to be "Kagaku Gijutsu Rikkoku (Science and Technology Based State)"; it also means to be front runner to lead the field of science and technology (Omi, 1996: 22).

Secondly, it is said that Japan needs to establish new industrial foundation through science and technology. Under the contexts of economic globalization many Japanese corporations moved their production basis and even corporation itself to overseas. The industrial hollowing has been undertaken. This condition might lead to weakening of power on domestic industries and on international competition; therefore, state owned sectors have had certain concerns. As one of the countermeasures against the industrial hollowing, some have argued to establish new industrial basis through R&D in science and technology (Omi, 1996: 16-18).

To sum up, state owned sectors grasp knowledge mainly from science and technology. This condition has social and historical contexts: to be front runner especially in the field of science and technology and to establish industrial foundation through science and technology. Under these conditions what kind of knowledge is valued in concrete level is showed below.

#### **"What kinds of Knowledge are Valued"**

The main fields Japanese state has tried to boost are "life science (bio-technology)"; "information and communication"; "environment"; and "nanotechnology." Basic Plan puts value on, in addition to these four main fields, field of energy; technology for production; social infrastructure; and frontiers. Three directions are showed as reasons to focus on these fields. "Creation of resource for new development (expansion of knowledge asset)"; "sustainable development in world market, enhancement of industrial technology force, creation of new industry and employment (economic effect)"; and "enhancement of health and life level of people, security of state and prevention of disaster (social effects)" (Basic Plan).

At below through Basic Plan what kinds of concrete knowledge are valued are explored. First focused field lies in life science defined as follows.

As 21c called "century of life," it can be expected that deeper understanding on life might contribute to rapid progress of medical science and resolve of food and environmental problems. This field is important for the sake of realizing healthy, vital, and secure life in our less child and high aged society which will be realized seriously from now on. (Basic Plan)

Based on this perspective, Basic Plan mentions concrete fields of R&D with strategic consideration in terms of international competition. For example, the following sciences are some of the suggestions by Basic Plan: genome science which can lead to new medicine development, order-made medical care, and functional food; clinical medical science and medical technology which make R&D practicable; bio-technology and sustainable production technology which contributes to food security and fulfilled food life; and such as brain science which might lead to development of information processing and communication system based on brain mechanisms

(Basic Plan). Namely, Basic Plan regards life science can contribute to preservation of health and life of people in Japanese less child and aged society (cf. Maruyama and Imura, 2001: 1419).

The second field is information and communication, which defined and argued as follows.

The progresses of R&D in the field of information and communication has certain importance for the sake of creation and expansion of knowledge intensive industries such as information communication industry and high-tech industry and for the sake of development of existing industries such as new progress of technology of *Monozukuri* (material creation). Also it comes to be important basis for secure and safe life of people, because it leads to transformation of broad socio-economic activities including not only industry but also daily life such as realization and diffusion of electronic commerce, electronic governance, work at home, remote control medical care and remote control education. (Basic Plan)

From this perspective Basic Plan introduces concrete suggestions on R&D: for example, advancing technology of network which enable stress free activities on network without caring time and space; computing technology which can analyze, deal with, accumulate, and search circulating mass information in high speed; human interface technology which enable all people to enjoy benefit of information communication society without having complicated procedures and stress; and device technology and software technology which are common basis for the technologies mentioned above. For strategy of state owned sector information and communication technology has key role in knowledge centered and intensive economy (Basic Plan). This technology is inevitable for knowledge-based economy and can be industrial basis itself (cf. Tuomi, 2001: 4-8).

The third field is environment defined as follows.

Field of environment is inevitable for preservation of natural environment including ecology with diverse species and for preservation of foundation for future existence of human beings with keep of human health and protection of life condition.

Based on this stance Basic Plan makes suggestion to conduct R&D on such concrete programs: for example, technology to realize circulation society by introducing production system which minimizes input of material and output of waste with natural circulation mechanism and life resources utilized; technology to minimize, evaluate and manage risk of noxious chemicals for human health and ecology; and technology of counter measure for green house effects (Basic Plan). This field shows the state owned sectors does not concern about only economic development. From the perspective of stability and security of people's life environmental field has certain importance.

The fourth field is nanotechnology which is defined and argued as follows.

Nanotechnology and material field support the foundation for development of broad science and technology field including above mentioned three fields; and also,

nanotechnology, especially, is expected to constitute the basis of all science and technology in 21c. (Basic Plan)

Nanotechnology is the field Japan stands in superior or equal position in international competition; state owned sectors especially put values on it. In concrete level the following suggestions for R&D are made: material technology to control structure and form of material in atom and particle size level which can be the basis for information communication and medical science; high added values laden energy, material for environment, and material technologies which reply for cutting energy spending, recycling, and also cutting resource spending; and also security space creating material technology to guarantee secure life space (Basic Plan). Due to its applicability, nanotechnology has stronger expectation.

These above mentioned four fields are the objects to be invested by state owned sectors through R&D. For the sake of stability and enhancement of people ' s life and development of economy and society, large amount of budget is to use for R&D and fulfillment of infrastructure. Basic Plan said as objective figure: 24 trillion yen (1% of GDP, or 3.5% of GDP ostensible developing rate), for R&D investment. This large objective budget tells the will and perspective of state owned sector on science and technology. And now how to produce these concrete knowledge needs to be considered.

#### **“ How to Produce Knowledge ”**

The term R&D, Basic Plan uses, means none other than knowledge production, because through inputting large amount of budget science and technology as knowledge is produced newly. Basic Plan argues to establish R&D system and to educate talented persons for the sake of urging R&D which are thought lead to economic development and progress of people ' s life.

Firstly, in order to establish qualified R&D system basic plan suggests “ preparation for competitive R&D conditions. ” Competition principle has key role to fulfil responsibility on using public budget, because competition is believed to function urging more efficiency and productivity. Under the principle, talented persons can be employed through market mechanism; the more talented a researcher is, the more offer he or she gets. This competition principle is said to enhance quality of researchers. In addition, Basic Plan suggests clear evaluation system, education of young researchers, and such as flexible, effective, and efficient R&D system. Namely, through the competition principle the education of talented persons and effective distribution of budget might be actualized; and, these conditions might lead to R&D system matching with contemporary social needs for it.

Secondly, Basic Plan regards university as the core institution supporting qualified R&D system. What is required for university lies in that ‘ to fulfil the central roles in science and technology system through various dimensions: to educate and keep superior talented persons, to create new knowledge which opens up future, to succeed to intellectual asset of human beings, and such as to make international cooperation through using intellectual resources ’ (Basic Plan). In other words, by strengthening the functions of education and research, university is expected to produce knowledge in accordance with social conditions and contexts. In addition, Basic Plan says the cooperation with local society, industry, and another research institution

is important for university for the qualified R&D.

One of the important styles of cooperation lies in industry-academic-government cooperation, Basic Plan argues, because it can function to bridge results of knowledge production to people's life and society through taking the forms of services, goods, and such as industrial technologies. For the better cooperation Basic Plan raises four points: "reform of arrangements of information circulation and talented persons exchange for strengthening the cooperation"; "preparations of conditions of technology licensing from public research institutes to industry"; "urging to make research results of public research institutes into business"; and "preparation of conditions for dynamizing high-tech venture". It means that through the cooperation R&D in the focused fields can be achieved; and, university has key roles in it.

As the prepared foundations for the qualified cooperation, Basic Plan mentions following points: "planned and focused preparations of equipment and facilities"; "fulfillment of research supports"; "preparation of intellectual foundation"; "positive correspondence towards fulfilling and standardizing system of intellectual property right"; "preparation of foundation for material creation"; and "enhancing activities of disciplinary association." Although it is not necessary to explain all of them in details, the point: "positive correspondence towards fulfilling and standardizing system of intellectual property right" has assured importance for this paper, because it has relations with knowledge production and economic development.

Thirdly, the system of intellectual property right, or patent is regarded as crucial from the perspective of knowledge production, state owned sectors say. To give property right to results of knowledge production, or R&D, which take large cost, means to stimulate incentive for R&D and help to circulate smoothly the knowledge based services and goods in international competitive conditions. Sougou Kaigi (comprehensive conference) argues this matter in the report: "Middle Summary on Intellectual Asset Strategy (trial)" as follows:

International competition on "knowledge" means not the scramble for limited resources by states, but the competition based on human creativity as unlimited resource. Also system of intellectual property right functions not for the monopoly of knowledge, but for stimulation of knowledge creating competition and for realization of social application of created knowledge. By each state of the world preparing the intellectual property right system as public policy for knowledge creation and application, knowledge and knowledge-based service and goods will circulate beyond borders; these will contribute to progress of developing countries and activation of world economy.

Under such condition, unlimited expansion of "knowledge frontier" through such as innovation of science and technology, it is one of the most important state's strategies from now on to propel the policies of intellectual property right which supports the creation and application of original inventions through reflecting the potentials of our state's science and technology on actual industrial competitive ability with the aim to contribute to the stable development of world economy. (2002a:

4)

It means that intellectual property right related policies have certain importance for stable world economic development and for boosting free circulation of services and goods. Moreover, it is one of the most important state's strategies to deal with the system.

As concrete level of intellectual property strategy Basic Plan says:

- \* To intend to promote of expert service provision which can be good internationally, and to strengthen function of conflict resolution.
- \* To accelerate cooperation in cooperative existing technology research and examination among Japan-U.S.-Europe and to support Asian countries' intellectual property right system at general level. Especially, to strengthen the actions for clear administration and international harmony for the appropriate patent protection of advanced technology such as biotechnology and information communication technology. (Basic Plan)

Also in the report on intellectual property strategy various measures to promote patent system are suggested: supporting patent application through public budget, lightening burden in patent application procedure, and such as settling law to put right on patent and to promote business (Japanese version of By-DoII Law). These concrete suggestions represent clearly the stance of Japanese state owned sectors that through knowledge Japanese society tries to make R&D advance and protect intellectual asset.

Based on these arguments, one can grasp Japanese state owned sectors have certain strategy on knowledge production: to put value on education of talented persons; to expect university in education and business creation through knowledge; to invest large amount of budget in above mentioned four focused fields through industry-academic-government cooperation; and to protect produced knowledge through intellectual property right system. In other words, it represents how Japanese governmental section want to perform knowledge production.

To sum up, under the social context of industrial hollowing and expectation for front runner, Japanese state owned sectors seek to establish industrial foundation and enhance the system of R&D. In these contexts knowledge almost means instrument to actualize secure life of people and economic development. In concrete level, they regard as fatal the focused fields: life science; information communication; environment; and nanotechnology; and, large amount of budget will be used for such fields. In addition, the ways of knowledge production lie in mostly to keep budget and talented persons; to use university in some dimensions as already mentioned; and to protect intellectual property right. These are the style of knowledge and knowledge production which Japanese governmental sectors put certain values.

Basic Plan shows these ideas and opinions in text level, however, in actual level some concrete measures were undertaken. On December 19<sup>th</sup> of 2001 "1<sup>st</sup> Summit of Industry-Academic-Government Cooperation" in which the three hundred tops from industry, university, and research institute got together to think about cooperation. Also from October 2001 to March 2002 "Summit on Local Industry-Academic-Government Cooperation" were held at nine places; and, four thousands and

four hundreds related people participated in them. These have functioned to create mutual understanding and trust. Talking about budget, about 410 billion yen was appropriated for industry-academic-government cooperation as state budget constituted of the normal of year 2001 and the supplement of year 2002; this amount means 1.6 times larger than normal budget of year 2001. Moreover, science and technology related budget was appropriated as 141 billion yen; it means 2.9 times larger than normal budget of year 2001 (Sougoukaigi, 2002b: 5). These facts evidently shows how state owned sectors actually expect and focus on knowledge as science and technology, not only in text level.

### 2-2-2 Knowledge Production at Business Sectors

This sub-section explores what kinds of opinion business sectors have for knowledge and how to conduct knowledge production. We argues Nippon Keidanren as the object of arguments; it is the biggest economic pressure group in Japan and has certain influence on Japanese society through economics, politics, and cognition. Five texts as report or agenda are used as resource text: “Kagakugijutusenshiryaku no Henkaku ni Mukete [Towards Transformation of Science and Technology Policy] (2001, June: 2001a)”; “Kokusaikyousouryokunimuketa Wagakunino Sangakukanrenkei no Suisin [Industry-Academic-Government Cooperation for Strengthening International Competition Force in Japan] (2001, October: 2001b)”; “Chitekizaisan wo Kakunisita Sangyoukyousouryoku no Kyoukanikansuru Kangaekatanitsuite [On the Idea of Strengthening Industrial Competition Force with Intellectual Property as Core] (2002, January: 2002a)”; “Jidaino Sangyouno Kibandukurinimuketa Kenkyuukaihatuno Suisinnitsuite [On the Promotion of R&D for Creation for Industrial Basis for Next Generation] (2002, May: 2002b)”; and “Chitekizaisansennryakunitsuiteno Kangaekata [On the Idea of Intellectual Property Right Strategy] (2002, June: 2002c).” All of these texts can be read from web site of Keidanren, though in Japanese. The criteria to choose these texts lie in that these have certain relations with the issue of knowledge and science and technology. At below this sub-section sees the following points and make the stance of business sectors clear: “how to grasp knowledge”; “what kinds of knowledge are regarded as important”; and “how to conduct knowledge production.”

#### “How to Grasp Knowledge”

Keidanren mentions its own stance on knowledge through “innovation” and “knowledge” as:

Keidanren thinks innovation is none other than the dynamo of economic development and has key to revitalize our economy. Therefore, it is necessary to create good circulation which promotes “knowledge creation” (fulfillment of basic-research by university); “use of knowledge” (the processes to connect basic-research to industrialization); “understanding of knowledge” (progress of people’s understanding on new knowledge and market’s acceptability) in parallel. (2001b)

It means that Keidanren thinks knowledge can bring about innovation and then support economic development. In this sense, what is valued is instrumental knowledge which might function to

achieve economic development.

Through considering contemporary social contexts: economic globalization and its pressure for competition force, Keidanren regards R&D has certain importance. The reason lies in that it can put added values on products and services. Moreover, it says governmental policies and arrangements need to support corporate activities in terms of R&D (2002a). Namely, R&D has importance under the conditions of global competition for the sake of competitive force. In this sense also knowledge might function as instrument to vitalize corporations.

Moreover, Keidanren mentions the importance of intellectual property or patent system, because the system can function to protect the results of R&D and help to make new business. Namely, Keidanren explains the importance of intellectual property right or patent to make benefit from R&D. In this context, knowledge is regarded as instrument to make benefit and also as object for private property.

From these insistences, one can comprehend Keidanren mostly defines knowledge from R&D and innovation and mostly regards knowledge as instrument for benefit making. And Keidanren thinks produced knowledge needs to be protected through intellectual property right and patent.

#### **“ What Kinds of Knowledge are Regarded as Important ”**

Keidanren mentions significant fields of knowledge as the objects to put investment on. The fields have clear overlapping with what state owned sectors raise. That is to say, life science, information communication, environment, and nanotechnology. At below explanations on these fields by texts are shown. Firstly, Keidanren says life science as important, because it might function to treat and prevent diseases through genome information; to interpret or reveal food 's functions and environmental effects on body. Genome information of plants and microbes can help to develop technologies of environmental recovery or preservation. Also life science can help to promote health and realize long-life society. In addition, these concrete levels of life sciences might lead to power for competition and promotion of bio-industries, as Keidanren puts emphasis (2001a).

Information and communication technology is explained as follows: in order that within five years Japan will become a top IT state and keep its status it is required to construct R&D system to produce information, Internet, and communication technologies. Especially, Japan has to lead the world through the fourth generation mobile technology which Japan has advantage. By doing so, Japan has to construct highly mobile system and realize ubiquitous network society (2001a).

Information and communication, or information, Internet, and communication technology (ICT) has central roles for economy in knowledge-based economy, because through these technology efficiency and profitability in various realms might rise. For example, Keidanren raises following points as keys for ICT: “ through effective utilization of IT resources and amelioration of trust and safety to construct highly-sophisticated information society ” and such as “ by connecting plural servers through networks to construct highly trusted system (business grid) in which business users can make use of computer whenever they want ” (2002b). Some argue the realization of advanced information society or knowledge-based economy based on ICT might have strong connections with strengthening competitive force in international

economy (cf. Tuomi, 2001: 4-8).

The field of environmental technology is defined as follows. “ It is necessary to conduct R&D in order to promote 3R (reduce, reuse, and recycle) towards zero garbage emission society for the sake of sustainable economy and society ” (2001a). It means that in order to realize sustainable society R&D in environmental technology needs to function. To say concretely, following kinds of plans are mentioned: for example, “ to construct environmental information foundation (system) which can survey environmental burdens such as air, water, soil pollutions through sensor with communication function and can accumulate data basis through networks; and to utilize them for the sake of realization of environmental friendly society ” and such as “ to intend to construct the system to survey environmental burden by using private sensor technology, communication network technology and by conducting positive experimentations for survey. ” Also it raises fuel battery; solar battery; waste-generated electricity; and such as waste heat recovery as the objects for R&D (2002b).

Nanotechnology by which Japan has superiority to rest of the world is explained as: “ nanotechnology has significance as foundational technology supporting information and communication, biotechnology, environmental technology and so on. ” Moreover, for its utilization for IT fields has the most important points in order to return the results for people within 5 to 7 years ” (2001a).

As fundamental technology to support various fields of technology, nanotechnology is expected to contribute to sustainable society through developments of new material with superiority in durability or lightness. To say concretely, Keidanren raises following points as aims of nanotechnology: “ to aim to strengthen competitiveness by enhancing micro technology itself and micro technology into nano-order, ” and such as “ through government and private to promote development of nano-system with new function such as device wiring constructing system, nano optics elemental device survey and acceleration system, and bio-nano device ” (2002b). To say precisely, nanotechnology functions as foundation for the field of bio-technology and the field of material creation, contributing to strengthening competitive force.

So far the four focused fields, on which Keidanren thinks to invest has certain significance, have been seen. These four fields seem to be thought to contribute to economic development through interactions among them. In this sense, it can be said that Keidanren as a representative of Japanese business sectors has thought R&D and knowledge from the perspective of economy or industry. In addition, the clear overlapping of the four focused fields with state owned sector might not be accidental, considering Keidanren ’ s feature as the biggest pressure group in Japanese economic field.

#### **“ How to Produce Knowledge ”**

The ways of knowledge production or R&D, Keidanren wants to promote, are next explanatory points. Keidanren has said the cooperation among industry-academic-government and intellectual property right or patent strategy have key roles in knowledge production in terms of economic development or industrial progress.

Firstly, Keidanren argues industrial-academic-governmental cooperation has significance for making R&D effective.

For sustaining vital economy and secure employment of our country, corporations should develop the highest level of new technologies in the world and make them get in operation. However, in the era of front runner the basic study has had great roles for R&D oriented to application. Therefore, government should strengthen basic study with enhanced international competitiveness for promotion of R&D orienting application through the cooperation and for realization of affluent economy and society. (2002b)

Namely, in order to push R&D ahead, corporations need supports from university and governmental sectors: in a word, industrial-academic-governmental cooperation. However, in reality, it is said that Japanese business world has not utilized functions of university well. Although with universities of oversea Japanese corporations have made cooperation or collaboration, with Japanese university the scale and content of it have been poor (2001b). Keidanren has thought such conditions might lead to disadvantage in international competitiveness, then it claims the strengthening of cooperative relations.

Secondly, Keidanren raises four axes as keys for the cooperation: “to construct evaluation system of industry-academic-governmental cooperation,” “to vitalize exchange of human resources among industry, academy, and government,” “to make promote mutual understanding and to make fulfill interfaces among industry, academy, and government,” and “university which can create seeds having top quality of the world.” Although it would be too much to see each of them in details, this paper focuses on the ideas and perspectives of business sector on university as central institution of knowledge production. To do so is worth, because it is university which business sectors actually make cooperation in terms of knowledge production. The relationships with governmental sectors tend to focus on administrative matters, such as subsidy or incentive creation. The business sectors have the following stance towards university who is the actual partner of knowledge production.

Concerning convert of national university into independent administrative institutions, each university should aim to constitute itself having clear idea, management orientation, and originality as independent management organization. Then, it is necessary to enlarge flexibility of university organization or curriculum formation in order to reflect quickly changes of economic conditions and technological trend based on ideas and management orientation of each university. (2001b)

This statement represents well the idea of Keidanren on university: it sees university as management organization. Put in another way, Keidanren regards university as management institution or organization to promote R&D and also innovation. Moreover, Keidanren claims “to introduce merit and performance system for evaluation and treatment based on the principle of competition” in university education and research (2001b). It means university professors need to perform high level of R&D and innovation rather than mere articles or lectures.

University as a management organization, then, comes to urge those activities. Based on these arguments, it can be said that Keidanren regards university as management organization which can function to strengthen competitiveness or to lead to economic development.

Thirdly, Keidanren positively has made suggestions on “intellectual property right strategy” and “patent strategy” in terms of knowledge production. It states the patent system for strengthening competitiveness and its features as following.

For the sake of strengthening industrial competitiveness it is necessary to constitute patent web based on basic patent. However, under the principle of pre-application, which means that a competitive opponent will go ahead, if one will make application as soon as possible, the more basic a patent is, the more difficult to write application in details is. Then, by arranging institution which puts superiority on those go ahead through deregulation on existing limitation, to take basic patent should be more easy.

In the processes of patent taking the most significant point is to take a lot of highly qualified patents. To constitute patent web including alternative technologies contributes to profits mostly. Japanese corporations can take advantage in this point. (2002c)

Namely, through patent strategy such as to construct patent web, corporations can enhance competitiveness; and, through patent system produced knowledge might amount to actual application to raise profit. Put in differently, Keidanren claims to arrange patent system which stimulates patent taking and to promote patent taking; these can be seen as parts of knowledge production.

To sum up, this sub-section has explored knowledge production of business sectors through three axes “how to grasp knowledge,” “what kinds of knowledge are regarded as significant,” “by which ways to promote knowledge production.” Based on those arguments seen above, the following can be said as features of Keidanren’s idea: knowledge is regarded as tool to develop economy and to promote innovation; knowledge related directly with economic development is valued; and through industrial-academic-governmental cooperation and patent system are regarded as keys for actual knowledge production. Of course, Keidanren does not represent whole Japanese business sector. This paper does not think all of the corporations connect knowledge and economic development. However, as the largest business lobby in Japan Keidanren has had assured influences on political realm and economic level of course; the ideas by this actor might show the direction to which Japanese business sectors in general has been orienting. As the large trend of business sectors, the logic mentioned above has strong sense.

The perspectives on R&D, patent, and such as knowledge production must be plural and diverse among different fields of business, scales and features of corporations. One can raise *Shimadzu co.* /t. holding Mr. K. Tanaka who won the Nobel Chemistry Prize in 2002 as a corporation which has boosted its development through R&D and innovation. Tanaka invented mass analysis method of protein. The method was applied to mass analysis machine. This machine has been used in medical field for finding the protein which includes cancer cell transmitting easily. The sales

of this analysis machine by Shimadzu have been occupied 15% of world share and amounted to 1.5 billion yen in a year (Asahi Newspaper, Oct. 17<sup>th</sup> 2002 downloaded by Asahi. Com). Of course, it does not mean Shimadzu produced the machine for the sake of only profit. However, this fact represents well the influences and power of innovation for economic wealth.

### **2-2-3 Knowledge Production at University**

This sub-section sees how university has mainly conducted knowledge production. As already mentioned, state owned sectors and business sectors have argued that it has been necessary to promote knowledge production through the cooperation with university. One of the large streams of knowledge production at university can be situated in this context. To comprehend this stream, at below, changes and expansion of university roles and knowledge production at such university are explored.

As we have seen, the style of knowledge production has by degrees transformed into open for society from shallow relations with society. Various actors, not ivory tower disciplines, have come to perform knowledge production with various interests and relations. Under such conditions, university has been one of the central institutions of knowledge production. Although pluralization of actors has undertaken, university has had still superiority in terms of stock of knowledge, talented persons, know how, and such as methods (cf. Godin and Gingras, 2000). For example, Ministry of Education (MOE) said in the text on industry-university cooperation and collaboration 1996 as:

It is necessary for university to promote more actively social cooperation and collaboration among each university with each originality utilized in academic search and study, university considering knowledge creation activities of academic research and study in broad sense can have social contribution in various dimensions. (MOE quoted by Tanaka, 1997: 108)

The point of this quotation lies in “social contribution” which university can have through research activities. Tanaka Michinana, Ritsumeikan University, argues social contribution of university as making university open. He argues openness, university needs to have, in contemporary society as follows. ‘The level of openness of university in concrete sense might mean to enhance life of people by vitalizing local society and solving various problems such as environmental field.’ Also, ‘the contemporary research tasks society puts on university are very serious and important, for example how to resolve industrial hollowing and environmental problem for realizing fulfilled Japan and such as to deal with depopulation, advanced age society and less child society,’ he says (Tanaka, 1997: 110). Knowledge produced in ivory tower must be invalid for such concrete tasks, because such knowledge does not have relations with society or social sensitivity. What is needed is knowledge with social sensitivity or concrete relations. In this sense, in contemporary society university has certain role to have linkages with society and to conduct knowledge production with them.

This condition has expands quality and quantity of accesses and demands from society to university. It can be conceptualized as “emergence of universal access to research functions

of university” (Kobayashi Shinichi, 1999: 111). Namely, if university becomes open for society, then various social needs will flow into it, and university will respond to them. Put in differently, various needs can put requests on research function of university.

This trend has another feature: pluralization of fund sources. Hitherto research budget of university depended mostly on university’s and governmental subsidy; however, in contemporary conditions, various types of funds correspondent with various needs flow into university. In a words, sponsors have been pluralized. Sponsors can be large corporation, local firms, and such as local governmental sectors; this can be called “multi funding system” (Kobayashi Shinichi, 1999: 112).

Based on these conditions, then what kinds of knowledge production are actually conducted is shown below. As one of the examples, we take Nihon University Business Incubation Center (NUBIC). This is an institute of the university having roles to connect results of R&D by university researchers and demands from corporations; to transmit licenses to corporation; and to receive research projects. In this institute researcher, patent agent, lawyer, international economist, and such as manager of venture business participate; they try to connect knowledge, which is produced or will be produced, and society. In concrete level these works have been the objects.

- \* To discover and evaluate research results having business potentials
- \* To be given research results, to make patent, and to protect right
- \* To find corporations which accept technology transmission
- \* To pay back royalty income to researcher through negotiation with corporations
- \* To response with consultation on technology and management from corporations
- \* To promote international technology transmission through international solidarity. (Sezai, 1999: 83)

Although we cannot grasp what kinds of concrete knowledge production NUBIC has done, we can see the strong relations with business and university knowledge production.

These types of knowledge production at university related with technology transmission and business have been one of the large trends, although not total trend. As we had seen, state owned sectors have tremendous amount and scale of investment on science and technology fields; then, it has certain importance for university to get budget for research or institute. In order to get university needs to be competitive and to be able to produce knowledge which fulfil satisfaction of demand side with advanced expertise. The arguments on industry-academic-government cooperation insisted by state owned sectors and business sectors have overlapping elements with main knowledge production of university.

The logic of university reform has similar logic with what mentioned above. The idea of Center of Excellence (COE) can be regarded as particular example of the logic. Namely, university needs to survive severe competition by creating one’s own originality or university identity (Arimoto, 1998: 92).

To sum up, the knowledge production by university often puts emphasis on “contribution to society”; however, most of the contents of contribution lie in the logic of economic: economic

development. This trend has affinity with that of state owned sectors and business sectors. University thinks about autonomous management for the sake of survive competition through strengthening cooperation based on multi funding.

#### **2-2-4 Knowledge Production at Thinktanks**

This sub-section sees knowledge production by thinktanks as a part of citizen sectors from the perspectives of what is the main idea on knowledge production and what are the main arguments this actor has produced as knowledge.

In knowledge society the expectation for thinktanks is large. One of the roles lies in to provide expertise for various actors in the processes of policy arguments or policy construction in government or parliament (Fukushima, 1998: 49). In the processes of policy construction it is necessary to comprehend social conditions, pro and cons of existing policies, and such as possibilities of alternatives; and, expertise and concrete data have crucial roles. Thinktanks can function to provide them as one of the knowledge producers in knowledge society.

One of the important features of thinktanks lies in relations with democracy, some argue. K. Quigley, from East Europe thinktank, says thinktanks has strong linkage with democracy by defining it from three elements: political system which ensures 'competition' and 'the broad participation of citizen in policy making processes', and the system which 'guarantees basic economic and political right' (Shimokawabe ed., 1996: 52). And he insists thinktanks can be school for citizens.

What is the most important point is thinktanks offer place to participate in for citizens. Thinktanks is the place in which citizen learn the ways of advocate and discussion and techniques to make government deal with citizens' demand more appropriately; it is the place open for citizens. Namely, thinktanks is like class of school for citizens. (Shimokawabe ed., 1996: 52)

It means that in contemporary uncertain and complex society, to deal with various problems enlightened talented citizens are needed; and, thinktanks can fulfil the demand as one of the institutions (Shimokawabe ed., 1996: 53). Taking these ideas into account, thinktanks can be regarded as one of the actors of citizen sector. In other words, thinktanks can function to deepen democracy<sup>16</sup>.

Thinktanks is also defined as central actor to promote "civil governance," some insist. One of the representative arguments can be seen those of "Civil Net" projects by Japan Center for International Exchange Foundation (JCIE). Civil Net was made from the necessity to think about networks of civil society, having aims to perform conferences and exchange program and to expand non profit sector through subsidy for research projects. This project has two main

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<sup>16</sup> Some trials have emerged in Japan. For example, having collaboration with governmental sectors in terms of policy construction, some have tried to deepen community governance. Defining oneself as policy constructing NPO, NPO Seisaku kenkyujo (Policy Study Institute) has worked on problems in local level. See Kihara (2001).

poles: “governance through civil society” and “corporate-NPO partnership<sup>17</sup>,” which can be seen as factors to deepen democracy.

In this sub-section we focus on the former pole from the perspective of knowledge production. JCIE argues necessity and significance of governance by civil society in contrast to bureaucracy. Yamamoto and Ashizawa, some of the main brains of JCIE, say the tide of globalization has influenced on governing system, or bureaucracy<sup>18</sup>; more and more complex

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<sup>17</sup> JCIE has stressed the need of ‘corporate-NGO partnerships,’ since this trend can lead to reinforcement and development of a civil society and democracy. On the one hand, NGOs need secure fund to conduct their missions. In Japan most of the NGOs cannot stand by themselves; they continue their activities relying on subsidies from government and also corporations. In fact most of the NGOs not only in Japan but in Asia rely too much on governmental supports, so government can manipulate NGOs and even use them as political instrument by showing off seductive subsidies (Yamamoto, 1999: 27). Then, the researches stress the importance of support system in terms of secure funding for NGOs inside the civil society. The main funding sources are corporation.

Moreover, through partnerships with corporations NGOs can acquire know how and skills of organization management and also human networks with profit sectors. Yamamoto says these partnerships enhance NGOs’ output and effect; ‘An increase number of NGOs are becoming business-like, and partnership with corporations is a powerful instrument for these NGOs to develop a self-sustaining pattern of activities’ (Yamamoto, 1999: 28).

One the other, corporations come to have interests in philanthropic activities through partnerships with NGOs, since as corporate strategy to make partnerships with NGOs can enhance community bonds and public relations (Yamamoto, 1999: 15; see also Kawashima, 1999a; 1999b; 1999c). For example, Yasuda Kasai Co. urges managers of local branches to become a member of a volunteer circle or a NGO at a community. In addition, volunteer group inside the Yasuda Co. has conducted such as beach clean up campaign and charity bazaars; the Co. allows employees to take paid volunteer leave three years and also volunteer holiday twenty days (Kawashima, 1999b: 159-161).

Through these kinds of connections, corporations can acquire broad community networks and new ideas, since NGOs have more community based network and sensitivity for needs of community than corporations. NGOs ‘have access to community residents, can readily identify community needs, and are equipped with professional expertise to meet such needs’ (Yamamoto, 1999: 24). Moreover, NGOs’

“innovativeness” can help corporations make successful business at community. Barnett Baron, co-chair of the Asia Pacific Philanthropy Consortium and executive vice president of the Asia Foundation, ‘stated that “more and more corporations have come to view corporate citizenship in cooperation with NGOs as part of a business strategy that must respond to their core business interest and their multiple constituencies” (Yamamoto, 1999: 25).

<sup>18</sup> This logic is very similar to that of A. Toffler. According to him, one characteristic of the Third Wave is backlash against bureaucracy system; it was realized taking form of new organization or system. Though, in the Second Wave national base system or institutions have been functioned through centralized bureaucracy, the systems is no longer valid in the Third Wave. Since the framework of nation-state base system or institutions have been eroded by especially borderless economic activities; the sub-national economic activities have not allowed the fixed national framework for economy (Toffler, 1982: 346). In contemporary economy one can conduct economic activities or dealing beyond national border with ease via one crick or one computer system. Instead of regulated economy by the centralized bureaucracy, each economic actor can conduct one’s own activities in contrast to top-down framework. Therefore, the centralized bureaucratic institutions have been declined. Those institutions cannot follow the constant changing dynamic conditions. It means one of the pioneer arguments of globalization. Toffler says the coming world economy is global game in which not only state, but also firms, labor unions, political-cultural ethnic groups, and even international institutions involve (Toffler, 1982: 425-6).

conditions stem from the tide threaten the system of governance; government based on bureaucracy cannot cope with them by itself (2001: 10). For example, 'the environment, migration, the spread of diseases such as AIDS, and drug trafficking' have risen as global issues (Yamamoto and Ashizawa, 2001: 17). In order to cope with these global issues various actors, including civil society organizations, need to function. Namely, 'It is clear that no single government can cope with these global issues, thus making it necessary for each government to work with other governments as well as with civil society organization' (Yamamoto and Ashizawa, 2001: 17-18). Then, the topic of 'governance through civil society' comes to be today's issue. In order to deal with and try to solve the global issues the role of civil society has certain importance, the institution says. '[T]he emergence of serious cross-border global issues has also given an impetus to the phenomenal development of civil society net-works, which in turn have had a major impact in terms of the influence of civil society organizations in all nations, thereby affecting in a fundamental way their system of governance' (Yamamoto and Ashizawa, 2001: 18).

This rise of civil society's role has relations with decline of state's role. Due to the pressure of fiscal crisis and globalization free market orientation, government has cut their roles in various fields (Yamamoto and Ashizawa, 2001: 19). For example, they cut the welfare roles such as treatment of the aged and child rearing; privatization of those public services has been undertaken. Under this social condition, who receives expectation for democratic governance is mostly civil society, especially thinktanks in terms of knowledge, it can be said. These are the main reasons to insist civil governance.

This kind of perception can be seen in "World Thinktanks Forum" held at Tokyo 1995. This forum was very large scale, getting thinktanks related persons from overseas and domestic together. One of the main issues of it was to create qualified independent thinktanks in Japan. Based on the oral presentations and reports by experts on thinktanks from Europe, North America, and South America, Reiji Utagawa, Japanese manager and researcher, said that in order to create qualified thinktanks in Japan the following points should have importance:

First, to collect and analyze information on pluralizing international relations. And to think, under transparent circumstances, what is Japanese national interests in them.

Second, to choose the issues which provokes competitions among bureaucracy organizations in terms of domestic policy decision making.

Third, to think about problems of bureaucracy's monopolization of policy, for example deregulation.

Fourth, to make research on the fields which government cannot deal with because

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The player of this game is no longer centralized bureaucracy, but complex organization similar to matrix which an advanced industry realm generates. The complex organization consists of plural organizations which share particular common interests. According to him, 'we seek to the world organization consist of intimately linked with each other like cranial nerve cells' (Toffler, 1982: 428). He thinks the global relations based on the organizations, called matrix; the bureaucratic institutions or organizations are no more valid.

of diversity of needs.

Fifth, to think about international affairs which are beyond the control of sovereign states. (Shimokawabe ed., 1997: 163-164)

And as concrete example, he raised marketization or deregulation of financial system in domestic level, which might stimulate competition among governmental sections. And also he raised international affairs such as environment, refugees, AIDS, drug, management of nuclear technology, and regional conflicts as most important issue. Finally, he raised the necessity of deregulation and structural transformation of bureaucratic system in Japan (Shimokawabe ed., 1997: 164-165). In this forum, also the problems of centralized bureaucracy was insisted and as one of the counter measures deregulation and reform were claimed as important. At the "closed session" of the forum, concrete themes, which Japanese thinktanks need work on, were raised. Some of them are shown below:

In the item on "global and international tasks" the following themes were raised:

- Potential growth of world economy, or sustainable world economy and its development
- New economic geography, or relations between regionalism and world economy
- Information flow and world integration

In the item on "problems related with Japan" the following themes were raised:

- Japanese roles in (East) Asia and world
- Relations among the U.S.-Europe Japan and competitive policies
- Japanese trade negotiation and deregulation

In the item on "domestic problems" the following themes were raised:

- Affairs on labor market
- Affairs on harmony of regulation
- Affairs on deregulation
- Analysis and suggestion on the fields of active volunteer activities

In the item on "civil society and democracy" the following themes were raised:

- The roles of thinktanks in democracy
- Roles of civil sectors and philanthropy in democracy or civil society

These themes were raised as important issues for Japanese thinktanks to work on.

What these concrete themes mean needs to be considered, because as mentioned above thinktanks is regarded as school of democracy or important actor to deepen democracy, however, in concrete level most of the research issues have assured linkage with economic logic such as deregulation or marketization. Of course, we cannot take the arguments of JCIE or the forum as general in Japan. However, as often mentioned, most of the thinktanks in Japan run themselves as almost profit business sectors; they often receive order from clients and produce ordered knowledge. Taking these arguments into considerations, it is not too much to say that thinktanks, in general, have affinity with economic logic.

## 2-3 Short Summary

This section two has considered knowledge production in theoretical and practical level, which means to actively create knowledge functioning to organize society. Knowledge production can be defined as intellectual activities to generate new or innovative elements based on “creativity.” The processes to engender creativity are mostly dialogue, research and study and R&D. In theoretical level it has been said that the pluralizations of motivation and actor have realized. If so, in knowledge society various actors can organize with negotiation or articulation through producing knowledge; knowledge comes to be more and more dynamic and rich in inner diversity.

However, in reality most of the activities of knowledge production have been undertaken in the framework of economic logic. The relatively active producers of knowledge: state owned sectors, business sectors, and university have insisted its importance and performed it based on mostly economic logic such as “creation of industrial basis” or “economic development.” For these aims these actors, most of the time, have regarded knowledge as instrument taking the form of science and technology. Although they sometimes have used the term “for stable life of people,” the structure of logic almost has been to achieve it through economic development. And thinktanks have frequently argued deregulation and free marketalization in terms of economic logic. Based on these arguments, we can see the main stream of knowledge production in contemporary Japan stems from economic logic. Most of the arguments on knowledge production have strong cognition that knowledge has importance, because it can lead to economic wealth. In this sense, in terms of knowledge production, knowledge appears as instrumental science and technology to achieve the aims. In other words, knowledge can be grasped through high-tech industry, management or know how, and patent strategy especially by business sectors. Related with these conditions, most of the arguments on knowledge society are under the logic of knowledge-based economy; most of arguments on knowledge production are under the logic of knowledge management or patent strategy without seeing another arguments to comprehend knowledge society. Of course, it does not mean whole arguments are like that, however, in discourse level and actual level what has tremendous influence is economic logic<sup>19</sup>. For example, if one enters the key words such as “knowledge society” or “knowledge production” into the search engine like “Google” in Internet, then he or she can confirm most of the results are connected with economic logic such as how to make innovation, how to take advantage in market through knowledge, and so and so.

Of course, economy is the foundation of people’s life. It is necessary to keep economy and industry well and such as to guarantee employment. It is important that knowledge function to protect foundation of people. However, the condition based on overwhelming influences of these economic logic and arguments on knowledge society and knowledge production, which cannot represent another possibilities, have certain problems in two points, this article thinks: that is, the point to make perspective and cognition on knowledge society and knowledge production

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<sup>19</sup> The general level of critics on state owned sectors, business sectors, university, and thinktanks, are developed in Appendix 2. To value the flow of logic these general critics are put in not body but Appendix.

narrow with exclusion of another possibilities and the point such logic might lead to or help polarization of society based on knowledge. Next section will explore the contemporary social background, or contexts of the main stream and then will develop critical consideration and problematization in terms of polarization through particular way of knowledge treating.

### **Section 3 Critical Consideration and Problematization**

In this section we critically consider the economic centered main stream of knowledge production. Firstly, this section explores the social backgrounds, or contexts, of the main stream from the perspective of “neoliberal globalization.” As already mentioned, the relations between knowledge and society are mutual; knowledge defines society, and at the same time, social conditions define knowledge. Thus, we think about the particularity of contemporary society as neoliberal globalization which organize way of knowledge society and knowledge production. Through seeing this concept as contexts, we might be able to grasp why knowledge is dealt with by mostly economic logic in contemporary Japan and why such logic has certain power.

Secondly, this section points out the overwhelming instrumentalization and commodification of knowledge under the influence of neoliberal globalization. This two processes mean to make plural dimensions of knowledge unilateral into mere instrumental, or technological. Also this section points out the trend of these instrumentalization and commodification largely stem from the particular interest and cognition: “profitability” and “performativity.”

Thirdly, this section problematizes polarization of society through knowledge-based some dimensions, as a result of functions of instrumentalized and commodified knowledge under the influence of neoliberal globalization. This article argues social polarization, focusing on education as realm to acquire knowledge; work as realm to use knowledge; and knowledge production as realm to actively produce and exert knowledge.

#### **3-1 Neoliberal Globalization**

Through the examination of opinions and actual practices of main stream actors in terms of knowledge production, it can be said that in contemporary Japanese society, the large stream of knowledge production has had orientation towards economic development and technological innovation. In order to comprehend the back grounds of the conditions of the dominant knowledge production, this sub-section sees neoliberal globalization. Although arguments on globalization have diversity<sup>20</sup>, this paper entirely focuses on economic and financial globalization based on neoliberalism. Firstly, this sub-section focuses on logic of neoliberalism. Secondly, it argues pro and cons of neoliberal globalization and its effects. Thirdly, it sees effects in Japanese society.

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<sup>20</sup> See Robertson (2001) as to diverse arguments on globalization.

### 3-1-1 The Logic of Neoliberalism

First of all, to develop arguments on globalization, the core elements of it: neoliberalism needs to be explored. To grasp the core features of neoliberalism, the framework of T. Kanazawa might be helpful. Although he raises three characteristics, this paper focuses on two of them. Firstly, as the semantic contents he raises “to keep the basic belief in efficient distribution of resources can be achieved through market competitions,” “to have as backbone individualism based world outlook which regards freedom as absolute,” and to have certain connection with finance freeing after dollar shock, which had criticized welfare state systems. These semantic contents of neoliberalism has been supported by the “principle of maximization of profits,” which might lead to “universal commodification” as possibilities, he says (T. Kanazawa, 2001: 49).

Secondly, neoliberalism puts more values on economic liberalism which differs from social liberalism. Moreover, as main features of economic liberalism he raises four points. First point is to regard market as most appropriate mechanism which guarantees freedom and less coercion for individuals. Second is to take stance to control and regulate labor union by introducing market principle in production sites. Third is to make strong economic leadership which can affect on the political fields through promoting deregulation of various barriers towards free economy. And fourth is to put values on the principle of the self-responsibility of individuals who can make self-decision; at the same time, for those who break the principle of freedom the law and order will cope with. These four features of economic liberalism function to guarantee free economic activities in free and competitive markets (T. Kanazawa, 2001: 49).

Namely, neoliberalism can be defined as the thoughts and the practices which put certain values on economic liberalism having linkages with “deregulation” and “self determination and self responsibility.” The thoughts and practices of neoliberalism make premise the principle of maximization of profit through free activities in markets.

Based on this kind of cognition, concrete policies have been made. As concrete policies based on neoliberalism, M. Thatcher of U.K., R. Reagan of U.S., and also Y. Nakasone of Japan: each government had promoted “privatization,” “deregulation,” “cut of social services and reform of tax system,” and such as “neo-centralization” from 1970’s (T. Kanazawa, 2001: 50). These neoliberal policies emerged from certain social contexts of 1970’s; the collapse of Bretton Woods System, twice oil shocks, and such as fiscal crisis of the U.S.<sup>21</sup>. In short, neoliberalism emerged for the sake to overcome fiscal crisis and economic depression (Hoshino, 1990: 60; Itou, 1993: 13). Under such social contexts, to promote privatization of inefficient public corporations means marketalization of services or production. Also to deregulate governmental restrictions on free market activities means to promote free economic activities; and as a result, through competitions innovations and subsequent economic development might occur. Moreover, to leave welfare and social services to private business actors means decrease of public fiscal cost and also new creation of industries which might entail provision of better

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<sup>21</sup> More detail explanation on the social contexts of neoliberalism, see Dumenil and Levy (2002) and Lubaron (2001). Also as to Japanese contexts see Watanabe (1996). He argues critically MNCs, structural reforms, and neoliberalism from the perspective of new forms of imperialism.

services. Furthermore, to promote these structural reform and free economic activities of corporations the small but strongly centralized government comes to be required (Gotoh, 2001: 91-92). Neoliberalism insists that government and administrative institutions should be scaled down, however, to perform such change and to put marketizing pressures on another countries require centralized government paradoxically. By seeing these perspectives, one can grasp the Koizumi cabinet has promoted neoliberal policies<sup>22</sup> (cf. Sakai, 2001b; Itou, 2001).

The ideas, practices, and policies of neoliberalism have certain influence in the global contexts. The developing processes of neoliberalism in global level can be defined as one of the forms of globalization (Hoshino, 1999: 60). Namely, the following movements of neoliberalism in global level can be regarded as globalization: the expansion of WTO and freeing market trend; privatization of the fields of water, electricity, gas, and such as social security; and MNCs' involvement in such fields. Free flow of human, materials, goods, information, and such as money can be one of the features of the processes. J. Gray argues this kind of globalization as "*global laissez-faire*" distinguishing from another approaches of globalization. It means that very large trend has developed to explain and solve various matters and problems through the principle of market; and means the certain connections globalization and neoliberalism (Gray, 2000: 32; cf. Gonzalez Casanova, 1996: 44).

### 3-1-2 Neoliberal Globalization and its Diverse Influences

Next, the pro and cons of globalization in international and domestic levels will be explored. By seeing these arguments, one can see contemporary society from the perspectives of neoliberal globalization more comprehensively.

The most influential arguments in international level is that free global economy will integrate both developed and developing countries into one system and that inside the system free competition will emerge with high efficiency, and then distribution of goods and services will be smoothly achieved. For example, in the "G8 Joint Communiqué" made in 2001 at Genoa mentioned globalization as following. That is, they keep in mind the globalization will become favorable for poor countries. To integrate the poorest countries in world economy is the most certain measure to reply to the foundational wanting of them. And, open trade and investment will promote world scale development and resolution of poverty (Asahi Newspaper, 2001.07.23. D. p.4). Various reports made by IMF and World Bank or by mass media have told economic globalization and free market competition will lead to constant developments of efficiency, welfare, democracy, and society, it is said (Gill, 1995: 401, 406).

In domestic level, "deregulation" and "free marketization" in correspondence to global competitive circumstances have been argued as large trend. There has been certain sense of crisis that without such measures Japanese capitalism will get behind from world competition

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<sup>22</sup> The Koizumi Cabinet has claimed the necessity of "structural reform" and "endurance of pain." The core elements of these claims lie in neoliberalism. The basic policies of the cabinet are based on deregulation and privatization. Some have argued most of the pain will be pushed on people at large and small to medium corporations, instead of on large corporations. See in details Taniyama (2002) on tax reform; Kawamura (2002) on the field of labor; Okajima (2002) on damages on small to medium corporations; and Aizawa (2001) on welfare and life of people.

(Nakanishi, 1997b: 23). At the same time, there has been certain sense that through opening market and promoting free competition the choices of consume will increase, the benefit of consumers will expand because of price down, and the level of life will make progress (Nakanishi, 1997b: 24). Some have argued the positive economic effects of deregulation and free marketalization based on the idea of neoliberalism.

Like these arguments, there has been certain influential stream of arguments which has thought economic globalization can guarantee economic efficiency and development. One of the main features of these arguments lies in that they take the trend of globalization as granted or take it as inevitable. Put in another way, it means "There is No Alternatives!" (Watson, 2001: 201; Gill, 1995: 406). The arguments on constitution of industrial foundations or acquirement of international competitive power through science and technology by governmental sectors and Keidanren have certain linkages with the trend of globalization and belief in its inevitability. Under the taken for granted logic of globalized world economy, many actors have thought how to keep competitiveness and such as how to raise economic rationality and efficiency; their interests lie in such ideas.

However, globalization also has negative dimensions. In the international level, economic globalization based on neoliberalism has been said to expand economic gap. According to the report of year 1999 by UNDP the following conditions are what we have in globalized age.

The income gap between the fifth of the world's people living in the richest countries and the fifth in the poorest was 74 to 1 in 1997, up from 60 to 1 in 1960. ....

By the late 1990s the fifth of the world's people living in the highest-income countries had:

- \* 86% of world GDP the bottom fifth just 1% Based on these world conditions.
- \* 82% of world export markets the bottom fifth just 1%.
- \* 68% of foreign direct investment the bottom fifth just 1%. .... (UNDP, 1999: 2-3)

Based on these kinds of world conditions, Subcomandante Marcos, one of the core members of Zapatista movement of EZLN<sup>23</sup>, grasps economic globalization as "The Fourth World War<sup>24</sup>" from the perspectives on impoverishment and marginalization. The summary of his arguments by F. Coronil are following; this paper uses Coronil's summary points which have relationships with the gap.

1. "Concentration of wealth and distribution of poverty," which synthesizes well-known information concerning the extent to which global wealth is being polarized among and within nations.
2. "The globalization of exploitation," which discusses how this polarization goes hand

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<sup>23</sup> See Watson (2001) on the relationships between Sapatista movements and anti-globalization movements.

<sup>24</sup> He grasps the Cold War as the Third World War by which 149 regional conflicts were provoked, and about 23million people were died (Coronil, 2000: 359).

- in hand with the increasing power of capital over labor worldwide.
3. "Migration as an errant nightmare," which reveals not only the expansion of migratory flows forced by unemployment in the Third World, but also by local wars that have multiplied the number of refugees (from 2 million in 1975 to over 27million in 1995, according to United Nations figures).
  4. "Globalization of finances and generalization of crime," which shows the growing complicity between megabanks, financial corruption, and hot money coming from the illegal traffic in drugs and arms.
  5. "The legitimate violence of an illegitimate power?" , which answers this question by arguing that the "sprittease" of the state and the elimination of its welfare functions have reduced the state in many countries to an agent of social repression, transforming it into an illegitimate protection agency at the service of meagaenterprises.
  6. "Megapolitics and Dwarfs," which argues that strategies directed at eliminating trade frontiers and at uniting nations lead to the multiplication of social frontiers and the fragmentation of nations, turning politics into a conflict between "giants" and "dwarfs," that is, between the megapolitics of financial empires and the national policies of weak states. (2000: 360)

Although seem a little bit radical, these statements well represent the negative effects and dimensions of economic globalization<sup>25</sup>. As the clear characteristic, one can see the phenomena of polarization of those have power and those do not. Neoliberal globalization has been expanding competitive market economy, and at the same time the roles of state including welfare or social services have been cut for the sake of decrease of tax costs. As a result, both international and domestic levels, the cut-throat polarization will develop. Those loser of competition have to take self-responsibility under the neoliberalism; this logic has supported the polarization. Moreover, the phenomena of polarization have occurred not only between developing and developed countries, but also inside those countries (Coronil, 2000: 361; Gill, 1995: 407).

Globalization has generated similar problems in domestic level, Japanese society. The problems stem from direct effects of globalization and from neoliberal based structural transformations. As mentioned above, these two factors are inseparable to think. The various problems led by neoliberal structural transformation in Japan are following. Firstly, neoliberalism has been undermining agreements and arrangements of welfare and social security based on social democratic ideas. It appears taking the form of cutting welfare or privatization of such fields (Gotoh, 2001: 89-90). For example, the increase of personal charge for medical spending and involvement of private companies into nursing care insurance as business field might affect negatively on those have not much capacity to pay.

Secondly, the great working division and accompanying fragmentation and declination of

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<sup>25</sup> See Koh (2001: 243-252) on concrete example of the negative effects of globalization in the case of Chinese urban cities and rural cities.

national economy can be raised as one of the negative effects. Through divisionization of labor the industrial hollowing will develop; it means the hollowing of national economy also. Moreover, the divisionization will lead to polarization of labors. Namely, due to the pressures from globalization and its competitiveness requirements power possessing corporations develop multinationalization of their businesses. Then such corporations begin to keep highly talented and skilled workers or mind labors, called as “symbolic analysts,” equipped with specialty and expertise (Gotoh, 2001: 90-91; cf. Brint, 2001). At the same time, the corporations in general start devaluing the middle and lower labors, who not necessarily have the specialty and the expertise, which can be sold by high evaluation. This kind of social condition can be recognized both international and domestic levels. This condition, as will be argued in detail later, can be called as polarization of society or as dual society. For example, as to the so called *freeter* (part time workers constituted by mainly the youth) phenomena, more than 2 million people live off by part time job can be regarded as socially marginalized in terms of future prospects, level of salary, and such as rights for social security. Put in another way, they can be thought to be in “liminalization” position (Nakanishi, 2000; Yamada, 2001; Kaneko and Oosawa, 2001).

Thirdly, the cut down of controlling power of state on national economy has been ongoing. It appears taking the forms of deregulation and freeing market measures in order to make domestic market more open. From another perspective, this kind of measures can be seen to devalue and even discard the domestic industries through cutting subsidies (Gotoh, 2001: 91). As a result, small to medium corporations having relatively weak management skills and capitals have been driven into bankrupts or into restructuring. In reality, in year 2001 the number of bankrupt is 19,565; and, 98% of them are small to medium corporations having less than 100million yen as a fund (Tsunoda, 2002: 12). Governmental sectors have insisted that Japanese society has to endure these kinds of pain for the sake of overcoming economic recession (cf. Nakanishi, 1997b: 24-25). Of course, in some cases it is acceptable to screen out those inefficient corporations in market economy. However, the screening out has been ongoing with the cutting of welfare and social services; it can function to generate the cognition of cut-throat social conditions in which the weak have to submit to the strong. Put in differently, under the social conditions in which to promote restart of business has certain difficulties, because many banks hesitate to make risky finance, those lose or made failure have been enforced to take self-responsibility as burden. This structure of cognition has devalued the cognition of “living together” which human society has valued (cf. Onai, 1999).

These three points are the main problems neoliberal globalization has caused in domestic level. One can interpret these social conditions as development of social polarization. Both in global and domestic level, the separation of those win and those lose have been ongoing.

### **3-1-3 Influences of Neoliberalism in Japanese Contexts**

However, some might criticize Japanese society is very equal society, and it does not have such polarization or inequality. In Japanese society the myth of equal society has been accepted. But in reality Japanese society has social stratum and inequalities based on it. Tachibanaki has argued inequality in Japanese society in terms of distribution of income and

asset (1998); Toshiki Satou has argued inequalities and their reproduction processes by the perspectives of education and accompanying job (2000). This paper uses the arguments by Takei who criticizes above mentioned two researches as lacking the perspective and understandings on globalization and multinaitonalization of Japanese corporations after 1985 (2001: 21). Takei 's arguments are based on comprehensive perspectives; they will be helpful to grasp the social conditions of contemporary Japan in terms of inequality.

He argues the gap of income by referring to "National Livelihood Survey." According to him, income gap per household expanded after 1980 's, recovered around later bubble economy period, and has expanded since 1993 (Takei, 2001: 16; S. Kanazawa. 2000: 75).

He also mentions the certain consciousness of people on the income gap, referring to "Kokumin-seikatu-senkoudo-chousa (National Life Preference Survey)" (March, 2000). That is, those felt the gap or difference of income has expanded, compared with decade ago, are following rate: "expanded" 9.77% and "relatively expanded" 27.9%, in sum 37.6%. In addition, the age 30 's, 40 's and 20 's, in their prime, felt the gap in higher degree. "These research results can be seen as the response towards constant expansion of income gap" (Takei, 2001: 17). Those are in the front line of the working place felt the income gap; this point worth notice.

Namely, according to Takei, as reality the income gap exists in contemporary Japanese society, and consciousness of people has reflected such social conditions. As main reason of this inequality, he raises neoliberalism based globalization. He raises three reasons. First reason of the gap is the influence of restructuring, bankrupt, and dismissal. Through the pressure from globalization, be it rationalization or restructuring, overall unemployment rate has risen. These factors have had certain effects on income gap.

Second is further development of employment styles into diverse through increase of part time based short period workers. It means the flexibility of work forces has risen. In fact, women short time employees, whose average wage consists in 887 yen per hour for 35hours per week, amounted to 7.73 million in 1999; 1.41 million increased for four years (Takei, 2001: 20). For employers these flexible labors including freeters are convenient, because they are low cost, easy to replace, and easy to dismiss.

Third is further development of performance-based payment system. As to performance-based payment system, the following rate of corporations think about introducing this system in three years at September 2000: 52.3% corporations of more than 1000 employees scale, 50.9% corporations of 300-900 employees scale, 37.8% of 100-299 employees scale, and 38.8% of 30-99 employees scale (Takei, 2001: 20). To introduce merit pay means that those have high skill and ability can get more salary than those not have them. In the past, work places function for workers to acquire such skills and abilities: on the job training in Japan. However, as the contemporary trend, for the sake of cost cut corporations tend to avoid such system, but to require immediately useful workforces with certain skill and ability. It means that workers in general are required to acquire skill and ability by oneself: self-responsibility (Shibuya and Sakai, 2000: 84-85).

The interactions of these causes have led to income gap in contemporary Japanese society. Especially, the second and third points will polarize between those have ability and skill and

those not have.

Furthermore, the income gap has stemmed from the arrangements of redistribution: “pension system,” “medical care,” and “tax system reform.” The reform of pension system has widened the gap in pension assets; it happened in accordance with income gap, according to Takei. And the reforms of health insurance and aged medical fee towards increase of self-pay have led to increase of family-pay and its burden of lower income family, especially such as aged or single. Moreover, the tax system reform has raised the rate of indirect tax, as a result, the regressive feature has risen, then the gap of disposable income has been widened. Through these negative effects of reforms, the inequality in redistribution system has expanded and institutionalized since 1980’s, according to Takei (2001: 20). These political measures rely basically on the ideas of the neoliberalism, which cut public spending and leave many affairs in private actors’ hands.

Based on these understandings, one can see the actual conditions of social polarization in contemporary Japanese society. The polarization is not the story of theoretical level. One of the largest causes of the polarization consists in neoliberal globalization: its influences and measures. By confronting the understandings of these contemporary social contexts and theoretical arguments on knowledge society, the meanings of the issue of this paper can be recognized. The main stream knowledge production conducted by governmental sectors, business sectors, parts of university, and parts of thinktanks can be understood as following. That is, in contemporary competitive circumstances under neoliberal globalization, to produce knowledge has direct connection with and impacts on business management, establishment of industries, global competitiveness. In this sense the trend of knowledge production and the trend of neoliberal globalization have overlaps. Namely, under the logic of globalized free market economy knowledge has been regarded as significant factor to generate economic wealth; the ways of the creation of wealth lie in instrumentalization and commodification as mention later. Moreover, many thinktanks have insisted that deregulation and free marketalization have certain significance for overcome of the recession and economic development; this claims have been supported by neoliberalism and have been enforcing neoliberalism (cf. [ルパロン, 2001: 74-77](#)). By seeing from the broader perspectives, one might be able to grasp the dominant trend of knowledge production relatively. In short, the dominant trend of knowledge production has been influenced by specific historicity; the trend is a trend, not the absolute feature of knowledge production.

Based on these understandings, the next point is to comprehend the specificity of contemporary dominant knowledge production and its problems. This paper focuses on “instrumentalization” and “commodification” of knowledge and their foundational interest and cognition<sup>26</sup>: profitability or performativity. Through seeing these elements, this paper can grasp and show the detailed level of the large trend knowledge production. Relying on the understandings, the connection of knowledge and social polarization will be explored.

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<sup>26</sup> Interest and cognition have something to do with motivation of an actor to produce knowledge. See in detail Chapter 2 of this paper.

### 3-2 The Logic of Instrumentalization and Commodification of Knowledge

So far this paper has argued the contents of the main stream knowledge production and its relations with neoliberal globalization as specific social contexts. In other words, so far this paper has focused on facts level; has considered what has been going on in the field of knowledge production. Then, this section starts dealing with the level of meanings. Namely, this paper intends to grasp the meaning of the dominant stream of knowledge production through the elements: “instrumentalization” and “commodification” of knowledge and as to their interests or foundational motivation: “profitability” and “performativity.” Through these considerations this paper might be able to the meanings of the main stream knowledge production based on neoliberalism.

In some sense the instrumentalization and commodification of knowledge can be classified clearly, however, these two have many overlapping and also mutual supporting elements. Firstly, the instrumentalization of knowledge means to make knowledge an instrument to achieve a goal. This way of knowledge has been existing since ancient Greek era and can be grasped by the concept “techne.” According to R. Bellah techne ‘is essentially making or producing. The artisan has a preexisting idea of what he wants to make and then shapes and controls his material to produce the desired product’ (Bellah, 1983b: 43). Furthermore, Aristotle defined ‘techne is related with to generate or create things. That is, ‘it is related with consideration and ‘art’ how to realize generation of the desired thing which can exist and not exist and whose origin does not consist in work or result but creator’ (1966: 1140a). He also gave techne the definition as “enable conditions to generate with true reason.” It means that techne always and already possesses “judgement of right and wrong” or “true reason.” And towards it techne functions to achieve. Put in differently, techne sets a certain judgement or true reason as granted without reflexive reconsideration and functions to reach the aim or goal. The essence of techne can be thought to have affinity with instrumentalization of knowledge. In the contemporary contexts, instrumentalization means that knowledge is produced and exerted for the sake to achieve certain aims such as “economic development” and “establishment of industries.” Namely, instrumentalization of knowledge means to produce instrumental knowledge to achieve certain aims which taken for granted.

Secondly, “commodification of knowledge” means to convert knowledge into a commodity which can be bought, sold, and dealt in markets (Roberts, 2000: 439). To say concretely, it means to convert knowledge into software, education programs, genome medicines, and such as management know how. One of the core common elements is to transform invisible knowledge into market sellable commodities through processing; some of them emerge as tangible commodities. As example, the commodification process of management knowledge is worth seeing. Commodification of knowledge “involves the conversion of localized, experiential and highly contingent managerial knowledge into a reified, commercially valuable form presented as objective, ahistorical and having universal principles” (Suddaby and Greenwood, 2001: 938). For the sake of reification of knowledge, the following three steps, codification, abstraction, and translation, are required: to codify personal experiences to be shared with others; to make codified knowledge manualized and universalized abstract information to be understood easily as the process of abstraction; and to apply codified and universalized knowledge into specific

conditions as the process of translation (Suddaby and Greenwood, 2001: 938-939). At the level of concrete application, knowledge appears as commodity. These processes show one of the patterns of so called knowledge management: to convert invisible knowledge into actual commodity. Although this example is just one of the patterns of commodification, the essence of the processes is represented well.

These two ways of treating with knowledge have certain influences on the trend of knowledge production. What have been valued in the processes of knowledge production by governmental sectors, business sectors, university, and thinktanks are mainly these two dynamics. One of the main points lies in whether knowledge can have value in markets. The foundational motivation: interest, of these ways of knowledge treating lies in “profitability” and “performativity” in the contexts of markets. Although knowledge has diverse dimensions, J-F. Lyotard argues the dimension of performativity as following.

We can describe the conditions that knowledge circulates through the same network with currency, rather than diffuses through value of “spiritual building” or political (administrative, diplomatic, and militant) significance. That is, instead of knowing and ignorance, the dislocation involves in knowledge lies in “knowledge for payment” and “knowledge for investment” as the case of currency, in other words “knowledge exchanged in the framework of preservation of daily life (reproduction of labor, or existence)” and “knowledge lent based on trust for maximization of performativity of plan.” (1986: 19)

He pointed out the linkage between knowledge and power of state and corporations in 1970s. Since 70 's the argument that knowledge can enhance performativity of plans by power holders has been held. At that time, performativity had relied on the expansion of power and of legitimacy in accordance with the amount of information or knowledge. Under such conditions, the most significant interrogation related with knowledge came to be not “whether it is true or not,” but “whether it can be useful,” moreover, “whether it can be sold” (Lyotard, 1986: 128). In short, one of the core values of knowledge has changed into performativity, which defines whether knowledge can generate profit or not.

Even in contemporary society, the similar arguments have had influences. For example, Gibbons and others, who have argued mode theory of knowledge production, have pointed out what have been significant for knowledge in markets have been “marketability,” “cost-effectiveness,” and “social acceptability.” Although they have put emphasis on significance of diverse and plural knowledge production, the core values have affinities with market logic. Even the element of “social acceptability” can be interpreted as market acceptability, in reality. Namely, the core interests of knowledge production by the main trend lie in how far knowledge can have market value or how much profit knowledge can generate (Gibbons et al., 1994: 8; Etzkowitz and Leydesdorff, 2000: 117-119; Shinji Kobayashi, 2002b: 288-291). What can be said based on these arguments is that although in contemporary society knowledge production can be plural and diverse, in reality the logic of market has certain influence. This point cannot be separated the trend of neoliberal globalization. The linkage can be seen

mainly from three points. Firstly, since 1970 government has restrained public investments into the fields, which do not have much marketability, because of its fiscal crisis. Governmental sectors have invested a lot of money into such focused field of science and technology as have mentioned, however, another they do not invest into another fields. Secondly, influenced by such trend, universities in general have tried to produce sellable and profitable knowledge in order to sustain their foundation. The trend of industry-academic-governmental cooperation and TLO seem inevitable. Thirdly, under the extremely competitive business circumstances, business actors have thought and said “ the crucial way to survive consists in innovation. ” Then they inevitably connect knowledge with profitability and performativity. Through complex interactions among these elements and influences by neoliberal globalization, knowledge has come to be instrumentalized and commodified (cf. Cowen, 1996; Rudel, and Gerson, 1999).

So far, the backgrounds of the dominant trend of knowledge production have been explored. What have had certain influences are neoliberal globalization, instrumentalization, and commodification. And what have been as interests are profitability and performativity. Knowledge production has been argued having various possibility and diversity in theoretical level, however, in reality, the logic of market has had certain influences. As a result, the points “ whether knowledge can be sellable or not, ” or “ whether knowledge can lead to economic wealth ” have been assured trends.

This paper does not intend to deny all of the logic of such knowledge production valuing profitability and performativity. Economy is one of the foundations of society; it has certain roles to support lives of people at large. The knowledge production orienting economic wealth itself does not have problem in essential level. However, it has problems through various effects. What this paper sets as problem lies in social polarization and inequalities stem from particular way of treating and cognizing knowledge based on neoliberalism. Next sub-section will develop the arguments on social polarization and knowledge as problematization.

### **3-3 Knowledge-Based Gap**

This sub-section considers the linkage between social polarization and knowledge from three realms. The realms are “ education ” which cannot be separated from acquisition and use of knowledge, “ work ” in which knowledge is utilized and exerted, and “ knowledge production ” which relate with knowledge creation and exertion. Of course, each realm does not have absolute autonomy; they are intertwined each other. Education can function to acquire skill and knowledge to produce knowledge; and work is the realm to exert acquired knowledge. In addition, some works might have something to do with knowledge production. Based on these basic understandings, each realm is explored. Through following arguments, one might be able to understand the linkage between certain way of treating with knowledge and social polarization<sup>27</sup>.

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<sup>27</sup> The idea relies on heavily on the discussions with Pro. Sadria Mojtaba that specific way of treating with knowledge has certain connections with social polarization.

### 3-3-1 Knowledge Acquisition and Use Gap in the Realm of Education

The realm of education has certain significance for acquisition and use of knowledge. This paper focuses on literacy as the linkage between knowledge and education. Literacy does not mean mere amount of or access to knowledge, but means capability to control, broad applicability (capacity of logical thinking), and knowledge on an object (cf. Fukuda, 2001: 164). Namely, literacy puts values on how to use, to apply to, and to understand knowledge itself to be used beyond mere access to and amounts. Education functions to help acquiring this sense of literacy.

Recently, some have argued education has had sense of social stratum strongly. If so, through education people might have gap in terms of acquisition and use of knowledge based on social stratum. In following arguments, based on the understandings of actual social stratum in Japanese society, the logic of educational reform in Japan is explored, which might reproduce the existing social stratum. Then, referring to mainly the arguments on “incentive divide” by T. Kariya, this paper confirms the linkage between education and inequality.

Firstly, according to Hashimoto there is certain stratified relation through career of father in the ratio of students who go on to the next stage of education. Based on the data of SSM research of 1995, ‘the ratio of going to higher education for self-employed experts is more than six times higher than that of farmers. When we fix criterion axis as small to medium corporations’ labour, managers and executives have 3.3 times higher ratio; self-employed experts have 3.9 times higher ratio; and white colors have 2.8 times higher ratio.’ Looking as a whole, manager-executive, self-employed expert, and white colors have constituted upper class; on the other hand general labours of large and small to medium corporations, the self-employed, and farmers have constitute lower class in terms of education opportunities. ‘In contemporary Japanese society there is certain inequality of education opportunities’ (Hashimoto, 2000: 7). It means the social stratum of one’s father largely affects on children’s educational background and the ratio of students who go on to the next stage of education. In other words, the child generation of upper class has more opportunities to go on higher education; they have more opportunities to learn knowledge access and appropriation. This argument functions as refutation to “100million all middle class” arguments (cf. Toshiki Satou, 2000).

As reasons of these inequality, Hashimoto raises “economic factor,” “cultural factor,” and “institutional factor.” Economic factor seems simple. In order to go to school and study students need certain amount of economic capital. Especially, if one will live alone, it will cost more. The economic foundation and situations of parents have certain influences: they might decide large parts on whether one can go on studying (Hashimoto, 2000: 8). Secondly, cultural factor means the domestic culture and social stratum will affect heavily on whether children can naturally acquire know how or knowledge from their juvenile. In the domestic circumstances children feel, learn, and constitute their value system. Parents of upper social stratum tend to have educational experience and values to learn and acquire knowledge; then, those values tend to be transited to children (Hashimoto, 2000: 8; cf. Bourdieu and Passeron, 1991). Lastly, institutional factor consists in the hierarchical structure of secondary education processes from the top to the bottom. According to hierarchical position one has,

the guidance, expectation, and possibility will be largely defined. If one is in the top class high school, he or she might have more opportunities to go to “good” university; on the contrary, if one is in the bottom class high school, he or she might disadvantages to go to “good” university or next step of education. These institutional factors might function to reproduce inequality in education (Hashimoto, 2000: 8-9; cf. Inui, 2000). For example, around 70% of Tokyo university’s students has come from upper class; the parents’ occupations are such as doctor, lawyer, experts such as professor, manager of large scale company and government office, and executive of small to medium corporations (Kariya, 1995: 64-65). One of the top universities of Japan: Tokyo university, has been occupied by those from specific social stratum. This phenomenon can be seen as the realization of those three factors’ interactions. Also according to Kariya, this kind of phenomenon has generality; as to another so called “good” or highly ranked universities, similar phenomenon can be recognized (1995: 68). The realm of education through which people learn and acquire how to access to and how to utilize knowledge has been one of the causes of social stratification or social inequality, moreover, it has reproduced such relations.

Japanese pattern of social stratum has been constituted for 30 years and recently has come to be in the processes of reproduction (Kariya, 2001: 17). The reproduction processes have certain linkage with education reform being under way. Furthermore, the logic of reform has certain affinities with neoliberal globalization. Osamu Watanabe explains educational reform from three characteristics related with neoliberalism. Firstly, reform has been under the way through collaboration between business world and former ministry of education and science (MES); MES has accepted the demands on reform from business. According to him, in the logic of reform, the ideas and thoughts of business world are reflected well in some points<sup>28</sup>. Secondly, reform has two contradictory ideas to make education slim and to educate elite or to fulfill advanced science and technology. It means that by cutting the budget of primary, junior high, and high school the reform has intended to invest surplus money into the fields of advanced science and technology or into higher education with specialty. What are argued in this logic: advanced science and technology might be the focused fields of the Basic Plan. Thirdly, as to contents of the reform what have been focused are “to slim,” “diversity,” and “freeing.” In response to the critics on stuffing education, the logic of reform puts emphasis on to slim; it has promoted the cut of 30% of educational contents of primarily school. Through such measures, the reform has claimed students can come to be able to study free from much pressure and come to have autonomy. The diversification means to reflect various demands on education. The diversity means that those who have talent have to take more training, and those who have difficulties to studies have to take less pressured training. And the freeing means to get rid of regulations on schools and education, which might lead to more diverse and free choices (Watanabe, 2001: 6-8; Manabu Satou, 2000: 78-79).

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<sup>28</sup> The point can be seen at the section of knowledge gap as to “work,” especially the classification of labor by Nikkeiren, one of the powerful business lobby. It can be said that those labor power Nikkeiren wants are just parts of the elite, or mind labor, and mass of the monotonous labor. See in detail Shibuya and Sakai (2000); and Kumazawa (1997).

These features of the reform can be seen to represent the logic of neoliberal globalization. The core point of reform lies in that it reflects and replies to the demands from business world to promote development of science and technology in mega competition era and to create the education system to bear the elite who have enough capability to manage MNCs or such large corporations, according to Watanabe (2001: 7; Manabu Satou, 2000: 83-84; Komikawa, 2002: 172-173). Put in another way, educational reform being under the way come to be the stream to educate those have capacity as the elite and to slim the content of education for the sake of cutting public spend.

This trend of educational reform has boosted the reproduction of unequal society. Even if the education contents are cut off, those have economic capital, relatively upper social stratum, can make children go to a crammer or support children's studies by various measures. Moreover, those in high social stratum tend to promote such countermeasures to make up cut load. However, those do not have such afford cannot make up the loss; those tend to lighten the capacity to learn. Consequently, contemporary Japanese society comes to hold the social structures to bear parts of the elite and mass of the non-elite. This point has something to do with next column work.

One of the important factors to explain the reproduction mechanism lies in "incentive divide"; by using data, Kariya explains this phenomenon in contemporary Japanese society. This argument is the detailed version of "cultural factor" of social stratum through education. According to him, comparing high school students of 1997 with 1979, the studying time outside of school and incentive for studying have been declining; students come to be less and less active to study and learn outside of school. For example, the total time of studying outside of school in one day was in 1979 97.5 min and in 1997 73.6 min including every stratum. In the case of upper stratum it was in 1979 119.5 min and in 1997 102.5 min; in the case of middle stratum it was in 1979 97.4 and in 1997 68.7 min; and in the case of lower stratum in 1978 73.3 min and in 1997 47.2 min (Kariya, 2001: 216). Furthermore, the answers for the questions, which can measure learning and studying incentive: 'the so-so record which might not lead to dropout is enough' and 'due to classes one comes to want to know more,' show the declining of incentive and especially wide declining of middle and lower stratum (Kariya, 2001: 217). The declining ratio has difference in accordance to social stratum; those in lower stratum have less incentive for studying and learning (Kariya, 2001: 115; 204-5; 207). Also Manabu Satou has argued in Japanese educational system the "escape from studying" has occurred; this escape leads to declining of basic study capability, or *gakuryoku-teika* in Japan (2000: 79). According to Satou, the lower the social stratum of parents, the more children fall into the escape as tendency. What Hashimoto argues as cultural factor of emerging social stratum has certain connections with learning incentive and time to study outside a school.

Yet, some might criticize it is very natural that the gap of capability of and incentive for studying emerges; those do not have will to study have to receive self-responsibility. However, by seeing from more broad perspective, it can be said that although the logic of "self-determination" and "self-responsibility" have been claimed in the competitive social circumstances, they might have validity under the equal conditions and equal start line for participants. However, in fact, as argued above, there are certain unfair circumstances in

contemporary Japanese society; the start line is unequal. Therefore to claim self-determination and self-responsibility without considering unequal social circumstances need to be criticized from the perspective of fairness (Kariya, 2001: 185-186; Komikawa, 2002: 176-177; Shibuya and Sakai, 2000: 85).

To sum up, in contemporary Japanese society there are certain social structures which work favorable for those have capital and in high social stratum and work unfavorable for those do not have much capital and in low social stratum. Put in another way, it is the inequality in terms of knowledge acquisition and exertion. If one thinks knowledge is certain significant capital, then social stratum in the field of education to learn knowledge acquisition and exertion and in literacy should not be lightened.

### **3-3-2 Knowledge Gap in the Realm of Work**

Knowledge gap exists also in the realm of work in which people exert their knowledge. As already argued in knowledge society the forms of working have been changing from muscular labor in industrial society to mind labor in knowledge society, to say simply. For example, the business model of customer center and telemarketing, which have made boosted corporate developments, have changed working styles in many fields. Such business model can be seen as software; it is mind labors who have made innovation to bear such compact knowledge (Poynter and Miranda, 2000: 186-188). Such software can change, through automation processes, factories, which used to be charged by muscular labor, and offices, which used to require many office workers (Morris-Suzuki, 1984: 113-114). Under such circumstances, whom corporations put values on are not unskilled manual labor, but highly skilled mind labor. S. Brint introduces scientific-professional knowledge as knowledge which knowledge-based economy requires for new graduates. This knowledge means, firstly, “ principles and methods of analysis (in some cases, scientific theory) that can be used to expand the knowledge base, to solve new problems, or to develop new applications, ” and secondly, “ a continuous body of research aimed at advancing and utilizing these principle and methods. ” And he points out these types of knowledge has been required by new knowledge based industries (2001: 114). It means that in knowledge based economy highly talented persons have been required who can lead to innovation of software or can construct a business model by handling expert knowledge well. However, the processes entailed by automation seeking to rationality or efficiency have also required certain amounts of labors working on simple and fragmented routines. For example, in almost all of the telecenters mass amounts of unskilled manual labors to just response to phone calls are required (Poynter and Miranda, 2000: 194-195). What is needed under the well organized telecenter is just receiving phone calls and replying with following well organized “ how to manual. ” Furthermore, such telecenter is often functioning whole day in order to deal with customer locally and at the same time globally, then work forces need to be flexible such as shift-based work based on contract employment for cutting cost (Poynter and de Miranda, 2000: 189; Sassen, 2002: 150-154; Carnoy and Castells, 2000). Namely, knowledge society on the one hand requires highly skilled mind labor and on the other hand requires unskilled simple manual labor, who

tend to make temporary contract relation<sup>29</sup>.

In reality this reorganization processes of working forces have been under operation. One can find this phenomenon through the expansion of flexible work forces including, freeters, or part time workers, and various kinds of contract workers. The number of freeters now amounts to almost two millions; and, most of them are youth. One third of those graduate from high school and one fourth of those do from university now become freeter (Kaneko, 2002: 210-1). It can be said that knowledge society requires structurally the elites and the flexible labors; those cannot be elite tend to fall into the status of freeters (cf. Nakanishi, 2000; Inui, 2000; Ball, 2001). Moreover, so called unstable workers have been increasing. Referring to labor force survey of Aug 2001, almost 1 million regular employees decreased compared with the last year; and, regular employees except executives amounted to 35.97 million. On the other hand, irregular employees constituted by part time workers and dispatched workers increased 640,000, compared with the last year; and, it amounted to 13.77 million. As a result, 27.7% of the whole workers involve in unstable and irregular employment and the ration has been rising (Kawamura, 2002: 17). It can be thought one of the phenomena stems from conditions of knowledge society.

What is crucial lies in that the reformation of labors has overlapping elements with the stratification related with education. As mentioned above education reproduces stratification of society, the produced stratification will reflect on the realm of working. Those from lower social stratum might not get the job requiring high skill as mind labor. Rather, those might tend to fall into the "escape from learning" or "declination of the will to study" and to be part time worker. Those to be part time worker, or freeter, seem to choose to be so by oneself autonomously, however, to be so can be understood as structural "liminalization" of the youth from broader perspective (Nakanishi, 2000: 88).

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<sup>29</sup> For example, the report made by Nikkeiren, one of the largest business lobby in Japan, in 1995 classified labors into three categories.

1. They type to use accumulated ability in a log run: It means that for this type corporations offer long term employment. Through On the Job Training and skill developments at outside of work places related with self-enlightenment processes, corporations offer the training programs.

2. The type to use high specialty: It means that corporations employ talented persons with expertise without guaranteeing long term employment. Corporations require Off the Job Training or self-enlightenment for; they mere support training programs without active involvement. By using merit system, corporations collect talented persons; they will be flexible worker forces.

3 The type of flexible employment: It means that corporations use various persons based on corporate demands. In this type not the work forces, but the styles of employment come to be flexible (Shibuya and Sakai, 2000: 84 they quote Nikkeiren).

One of the indications of this classification is none other than knowledge. The former two categories require expert knowledge or high skill, and the last category does not require much. This logic has certain affinity with the reformation of labor force in knowledge-based economy. Moreover, most of the workers are required to acquire those skills and knowledge through "self-enlightenment" based on "self-responsibility." Corporations want persons who can be used immediately; they do not want to spend training costs under neoliberal globalization and its excessive competitions. See Kumazawa (1997) also.

### 3-3-3 Knowledge Gap in the Realm of Knowledge Production

Knowledge production, one of the core elements of this paper, has been sustaining and creating socio-economic gap. It means the knowledge gap through production and exertion of knowledge. This paper focuses on business in terms of knowledge and gap. As mentioned above, the main stream of knowledge production has claimed “knowledge has significance because it leads to economic wealth.” This logic has strong sense in especially governmental sectors focusing on science and technology or business sector providing various services related with knowledge; of course, as mentioned above, university and thinktanks also have connection. Especially, MNCs having affluent human, economic, and such as intellectual capitals have certain advantages and influences in the realm of knowledge production. This paper focuses on knowledge related superiority seeking activities by MNCs, be it R&D or patent strategies, which have certain connections with the gap.

For the business sector one of the most important factors for development and preservation of superiority lies in ability of R&D; through R&D contemporary corporation can make effective and efficient innovation (Ito, 1993: 103; Lee, 1998: 105; Tanaka, 2000: 77). Although this paper already defined innovation, for reconfirmation innovation can be defined as following: by organizing and articulating plural different knowledge of how to treat objective materials, innovation make it possible to manipulate what was impossible to deal with or to manipulate the objective materials by different or new ways (Ito, 1993: 104; cf. Nyhan, 2002b: 28). In addition, innovation consists of product innovation, which bears actual products, and process innovation, which bears know how or business model as soft (Shibata, 2002: 6-8). One of the core elements for innovation is none other than knowledge, especially R&D related with instrumental knowledge. Under the global mega-competitive circumstances, many corporations have been asserting the significance of innovation making. It is said like that ‘The firm’s future success depends on the wisdom of that fundamental choice and on the ability of its dominant competence to exploit its potential in response to market demands. Just as nature poses questions for science, the market is continually putting questions to the firm. Innovations are the answers’ (Gibbons et al., 1994: 56).

Can most of the corporations conduct innovations? As argument level, even a venture corporation can conduct innovations, however, in reality those have qualified creative abilities and ideas can make success; many venture corporations, with small capital, disappear through losing competitions. As Kitamura said ‘likewise, in the era of the information capitalism who hold center are large capitals with absolute necessity and superiority’ (2001b: 163). It seems very obvious that the more who have capital, the more who can hold advantage; the large corporations have more and more economic capital and human resources and make use of them for R&D.

However, Yoshio Ito argues the scale of corporation and scale and diversity of R&D do not have relations. According to him, through the positivistic approaches the following arguments emerged; the diversification and expansion of the scale of corporation make the efficiency and effects of R&D declined (1993: 106-110). The more corporation have multi dimensions and diversities, the more it is difficult to organize and articulate those elements. Of course, in some respects, large companies have certain advantages in terms of capital, opportunities,

and such as human resources, however, they have disadvantage in some points such as difficulties of communication among members of diverse organization and high payment for the staff of R&D (Ito, 1993: 107).

However, these disadvantages can be overcome by some strategies held by large corporations, especially Multi National Corporations (MNCs). Referring to the arguments by J. H. Dunning Y. Tanaka argues dominant position of MNCs and the structure of domination; he raises three elements which sustain superiority of corporation, especially large corporation in international trading circumstance. This paper introduces first element<sup>30</sup>, which has relations with knowledge. The element is “ownership-specific advantage” which consist of two poles: ‘rights of asset, or non-material superiority,’ be it, product innovation, management of production, organization marketing system, tacit knowledge, bank of experienced human resources, and such as know how, and ‘superiority for existing corporation to new comers,’ be it, expert, labour, natural resources, information, exclusive access to product market, and such as financial (Tanaka, 2000: 78). If a company had these capitals, it could acquire very much superiority to another corporations. In contemporary highly information/Internet and communication technology equipped society this superiority can be achieved through co-operation or alliance of corporations with large MNC centered.

This system has been called “alliance capitalism” defined as following:

.....Although this new form of capitalism based on basically technological developments and globalization, it includes both co-operations and competitions among main corporations. It means that those corporations facing with competition on large cost for R&D and speed upped cycle of developments have strategies to get access to new supplemental technologies in order to strengthen effects of particular activities such as R&D, marketing, distribution, production through enhancing innovation and learning processes. (Tanaka, 2000: 85)

Namely, through co-operations main corporations enhance its efficiency and productivity of for example R&D. Put in another way, the scale of a corporation does not necessarily reflect the effects of R&D, because within an alliance a corporation can utilize affluent resources from outside. This is the core element of alliance capitalism.

The specific features of alliance capitalism lie in the following three points. Firstly, the high pressure for competition, large scale R&D budget, and decline of R&D made cross-border alliance, especially alliances among the U.S-Japan-Europe relations. It is not so much efficient to conduct R&D by oneself; to make alliances and do co-operation probably enhance the efficiency of R&D and quality-quantity of innovation (Tanaka, 2000: 86). Secondly, many small to medium corporations have come to be subcontractors through the emergence of networking (Tanaka, 2000: 86). Sometimes the subcontractors as venture corporations do work on R&D; then, contribute to the large network of MNCs. This might be one of the reasons why MNC itself do

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<sup>30</sup> Second and third element are “internalising advantage” and “location-specific advantage” see in details Tanaka, 2000: 78.

not conduct R&D that much, but keep superiority. Put in differently, MNCs who have more and more capital have advantage and make small and medium sized corporations conduct R&D as subcontractors. Thirdly, alliance capitalism is constantly reorganized through “inter-firm co-operative arrangements”; networks help interactions of firms with value chains or shared value (Tanaka, 2000: 86). Through these factors alliance capitalism function to give MNCs advantages. Who hold much amount of capital are MNCs; although the alliance or network is non-hierarchical, then, who grasp the ownership-specific advantage is MNCs (Tanaka, 2000: 87). To construct the co-operative relations among corporations is the core element of alliance capitalism. It represents one of the specific points of knowledge-based economy. In short, R&D is conducted not by a corporation, but by corporations’ networks in more effective and efficient ways. This is one of the significant strategies contemporary corporations takes related with knowledge (Takuya Hayashi, 2002: 5; 2001).

Another factor which gives advantage for MNCs is the system of patent; through taking patent a corporation can monopolize non-material resources, be it, know how, soft ware, and even actual product. Actually, large corporations have been eager to take patents. Four strategies of patent taking exist. Firstly, by using patent map and patent data base a corporation can analyze framework and system of patent and technology; then it can keep advantaged competition by utilizing its own patent. If corporations understood well what kind of patents and technologies have been developed by another corporations, then it could seek such as niche markets or behave more strategically to make benefit. This strategy is called “positioning approach” towards patent. Secondly, by taking basic and related patent systematically, corporations can establish core technology which, of course, enhances the ability for competition. This strategy is called “establishing core technology approach” (Nagata and Sasaki, 2002: 20). Thirdly, through reviewing their own patents corporations can remove useless patents for cutting preservation cost and sometimes can use even useless patents as blockage for preventing another corporations from entering the fields. This strategy has internal perspective, reviewing, instead of external perspective, application for patent takings (Nagata and Sasaki, 2002: 20-21; cf. Ootsuka, 2002: 138). Fourth strategy contains the idea that the results of R&D must be applied for as soon as possible. This strategy values speed and amount as far as possible; it is called as “speed and scale of application oriented” approach (Nagata and Sasaki, 2002: 21). Seeing these patent strategies, one might be able to understand how corporations try to get superior to another actors by using patents. In knowledge society, corporations have certain strategies on how to protect produced knowledge and realized knowledge from another actors.

The patent system in general has the sense of intention to promote innovation through keeping protected rights for basic patent, rather than mere protection (Ootsuka, 2001: 3). Therefore, for corporations it is very natural corporate activity to use patent system to generate innovation. However, the system has been criticized from various perspectives. Some have criticized the phenomena of “tragedy of anti-commons” which means excessive patent protection bars creativity and innovation from occurring paradoxically. Others have criticized

“bio-piracy<sup>31</sup>” which means innovators tend to regard their innovation or invention emerges from zero, or by their own efforts only, then enclose various bio resources through patents. In addition, some have argued MNCs have used intellectual property rights and patent system as tool to realize their own narrow profits based on the power relations in specific industrial fields, especially bio industry (Ootsuka, 2002: 139-141). Although these critical arguments have importance, this paper focuses on socio-economic gap related with patent system from the perspective of knowledge production.

In order to indicate the socio-economic gap stems from knowledge production, this paper makes two elements confront: alliance capitalism and patent system. Both have close relationships in terms of knowledge production strategy by business sectors. Under the alliance capitalism many R&D and patent takings are performed through cooperation and sub-contract (Ootsuka, 1999: 37, 80, 150-151). Through the web or network of R&D, patent strategies, and such as sub-contract system the large alliance can emerge with large MNCs centered. These kind of economic activities are specific for knowledge-based economy and knowledge society. Put in reverse, society in which such activities have certain roles can be regarded and represented as knowledge society. In this economy those comes to hold power and influences are corporations having enough capability, human and economic capitals to promote patent taking and R&D. Namely, parts of corporations can have superiority based on knowledge. Put in differently, these conditions might lead to the gap between those can promote knowledge production and those cannot. For example, the core elements of high-technology product: Windows 95, heavily depend on early period R&D investment. For inventing a disk: Windows 95 Micro Soft co. It. invested 150 million to 200million dollars. On the other hand, to make a copy of Windows 95 takes a small cost. What is needed are certain amount of capital to conduct early investment and talented mind labors who can invent such software through knowledge (アーサー、2001: 236-237; cf. Persaud, 2001: 110-111). By taking patent of produced products and knowledge, corporations can make them as sources of huge profit. A. Persaud argues innovation gap in international society level: gap between those have power to make innovation and those cannot have such power. This gap has certain relations with global gap, he says. According to him, patent system prevents innovation from becoming public domain, but promotes privatization of innovation. Then, the system has been supporting the structure in which those have wealth get richer, and those do not have get poorer (2001: 110-111). Although his argument focuses on global level, the core elements can be applied to domestic level. In fact, in Japanese society, the gap has been expanding between large corporations and small to medium corporations. Of course, not all of the reasons stem from knowledge production. However, one has to notice the influences and impacts of knowledge production on the gap in knowledge society in which knowledge organizes the plural realms of society.

Some might criticize that “ these gaps led by free economic activities; they are inevitable. ”

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<sup>31</sup> Various materials including local natural resources have been the objects of patents. By inventing processed products, many MNCs tend to take patent including the resources, then, local people will face with the problems of rights to use them. See in details Ootsuka (2002: 141-142) and Yamana (2002).

However, from the start point, there must be inequality, which decides whether one can conduct knowledge production and whether one can belong to alliance. This point of inequality has assured affinity with the arguments on knowledge gap in the realm of education. At last, the more power the actors have, the more advantage they can hold. One of the core powers is none other than knowledge in knowledge society. The economic and social gap stems from knowledge and knowledge production will be very destructive, because its stake, return, and also cost are so large. While, the trend of neoliberalism has undermined social support and welfare systems; those losers are forced to take self-responsibility. Under these social conditions, economic and social gaps stem from knowledge production can be seen to function to boost social polarization.

### **3-4 Short Summary**

The above sub-sections have developed knowledge related gap through the realm of education, work, and knowledge production; these realms have interactions. In knowledge-based economy what has been regarded as significant are knowledge and the elite which can lead to economic wealth or innovation. Those corporations having such knowledge and mind labor as capitals might have superiority via R&D and patent strategies. These core features of knowledge-based economy seem unproblematic, because these are the result of free economic activities, or competitions. But they will lead to negative effects by being connected with neoliberal globalization. The main reason is that under the logic of neoliberal globalization social supports and welfare have been undermined, and at the same time the logic of self-responsibility has been emphasized. Consequently, those cannot be well adapted to knowledge society, be it corporation or individual, will be screened out. Those screened out must be insignificant from the viewpoint of economic rationality and efficiency. The neoliberal based system has been merciless towards those made failure or lost the competition; the negative influences have affected on the weak. Then, as a result, social polarization has been on going. The following figure shows the image of social polarization.

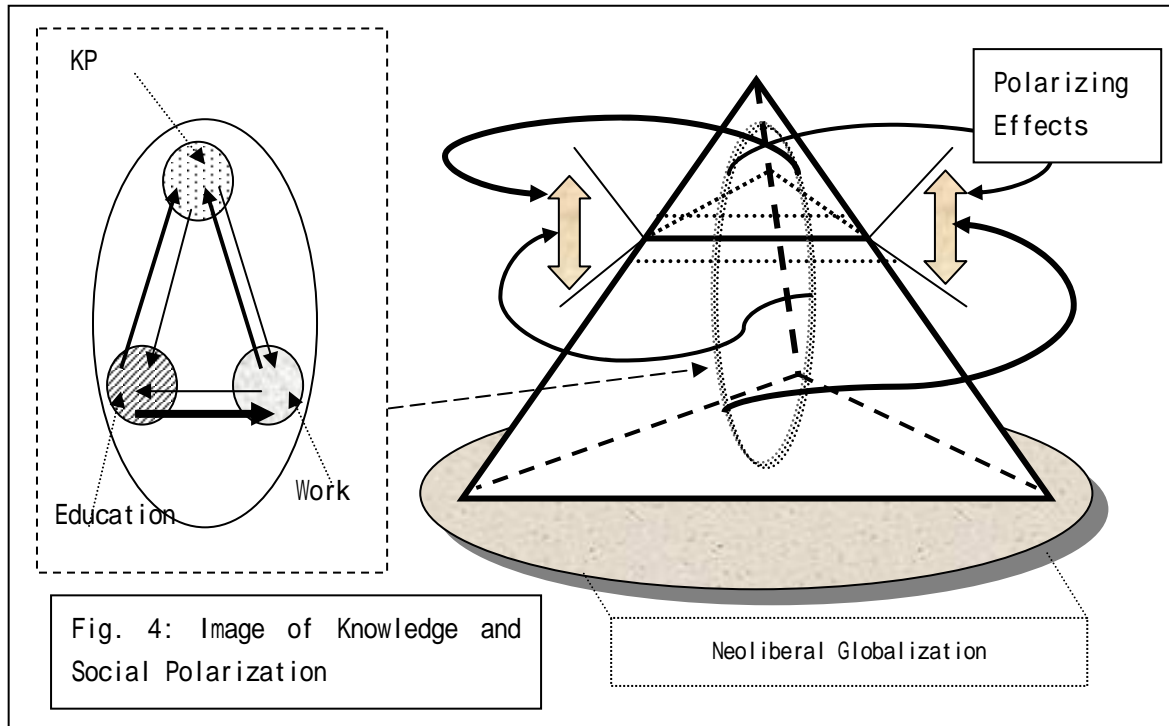


Fig. 4: Image of Knowledge and Social Polarization

What should be concerned lies in that such social polarization would push its costs on society. Even if neoliberalism claims welfare cut and self-responsibility, dropping out students, labors, and even corporations might constantly bear. As long as those dropping out live in society, though the term is naive, society has to receive social burden in coming future (cf. Yamada, 2000: 204). Or should such people die in perish as useless beings? It is not too much to say that through social polarization negative effects might emerge: for example, deterioration of public security, despair for life itself, nihilism, and such as moral corruption. It means the hollowing out of society as the realm to live together. If the hollowing processes develop, and the realm of living together is devastated, then the claims as the aims of treating knowledge, which made by the main stream “rich and wealth lives of people” or “healthy economic industrial foundation,” do not have much sense. This master paper problematizes social polarization and hollowing out of society whose one of the main reasons has been knowledge, especially under the neoliberal globalization logic.

Some approaches can be raised for this problematization: for example, to cope with it through redistribution of capital in order to bridge the already constructed gap after the event; to arrange social system to prevent inequality from emerging; to including the relatively weak into markets mechanism with various opportunities gave. Of course, it has certain significance to argue and develop these counter measures. However, to do so beyond the aim of this paper. This paper keeps focusing on “knowledge.” From the perspective of knowledge the following points can be expressed. This paper already confirmed that the main stream or trend of knowledge production has regarded knowledge as tool or instrument to function to realize narrow private profits. This kind of performativity and profitability oriented knowledge production has been promoted by state owned sectors, business sectors, university, and thinktanks by taking various

forms. This large trend of knowledge production can be one of the causes of socio-economic gap in Japan. Based on these arguments, this paper will develop further argumentation on alternative way of knowledge production, rather than economic centered ways. The alternative means "Social Consciousness Knowledge Production (SCKP)" as this paper will define.

The significance to argue SCKP lies in mostly following three points. Firstly, by arguing SCKP one can relativize the dominant trend of economic centered knowledge production. Put in differently, in knowledge society to argue and constitute cognition on the different model of knowledge production from economic centered means possibly to organize society differently, especially the cognitive dimension. Instead of narrow private profit centered cognition, knowledge production can contribute to publicness with social consciousness and at the same time can be constituted by social consciousness. Secondly, SCKP has possibilities to deal with and work on social polarization, because it has certain consciousness and awareness towards society as the realm to live together. This paper does not confine SCKP to counter measure toward social polarization, since if SCKP is limited by such framework, then one cannot grasp well the dynamics of NGOs, NPOs, and networks as objects of analyses, due to over emphasis on "for the sake of society." Most of the actors have been conducting knowledge production not for the sake of resolve of social polarization, but for the sake of each interest and motivation. Even though it starts from each actor's interest, because SCKP contains social consciousness for living together, it might produce knowledge deal with social polarization as possibilities. Thirdly, due to the increasing complexity and uncertainty of contemporary societies, it has certain significance to constitute analytical understanding of society. Through sophisticated knowledge and analytical understanding, one might approach to questions: such as, how to think about contemporary complex society, by what kind of framework, and how to deal with it. Namely, this kind of knowledge production can be one of the possibilities in contemporary society to realize better society. Based on these contextualization and understandings on SCKP, next chapter will develop analytical frameworks as tools to work on the issue of this master paper.