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CULTURE AND INFORMATION SOCIETY: THE JAPANESE WAY

MIROSLAV TUDJMAN

University of Zagreb, Faculty of Philosophy, Department of Information Sciences,
41000 Zagreb, Dj. Salaja 3, Croatia, Yugoslavia

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Abstract—In this article we analyse the cultural prerequisites of the exchange of knowledge: cultural, ontological, and epistemological principles on which knowledge is organized in Japanese culture. A model is developed that distinguishes epistemological determinants and constituents of knowledge. Cognition, communication, memory, and information function are recognized as *basic constituents* of thinking. Thinking is a primary process and creator of knowledge, knowledge structured by functions that take part in that process, either on social or individual levels. Culture and technology are recognized as two *basic determinants* structuring knowledge and informatization process. According to this model, a dominant form of knowledge in Japanese culture is corporate knowledge, determined by interfunctional connections of: cognition as field and group dependent knowledge, communication as image oriented knowledge, information as organic relevance, and memory as time-bound knowledge.

1. INTRODUCTION: KNOWLEDGE AND DEVELOPMENT

Japanese economic and industrial growth and development are for Western culture a source of admiration and wonder. Admiration because Japan has in a very short time, compared to Western standards, turned into one of the most developed countries in terms of economy and industry; a country whose scientific and technological development has reached and even surpassed the development programmes of the most developed countries; a country that has made the most radical step from an industrial into an information society;† a country that has, from an importer of knowledge and technology, turned into an exporter of new technologies and “knowledge technologies.”

Western culture wonders not only at Japan's speedy development from a feudal society into an industrial and even information society, but also at the fact that these changes have occurred with much less political, social, and cultural perturbation than Western societies had experienced in their own history.

Moreover, it is felt that Japan has preserved its cultural identity in spite of fast social and technological growth, and that the Japanese culture is much less susceptible to the negative effects of fast technological and industrial growth than Western culture.

For a long time the opinion has prevailed that Japan's economic and technological development is due primarily to some of its social and psychological characteristics (education, industriousness, loyalty, discipline, concentration, etc.), which enabled Japan to successfully “copy” and apply Western science and technology. Now, when Japan has begun to produce and export new (Japanese) technologies, it is apparent that Japan does not copy Western models of either industrial or socio-political developments, since growth into ‘a culturally oriented industrial state’ proceeds through development of “culture-oriented industries,” in order to become a “nation with a balanced industrial and cultural base.”‡

†Japan is leading in computerization, robotization, and introduction of new “technologies of knowledge.”

‡And further: “Japan must try to balance its economic strength with culture, and thereby contribute to world peace and development” [1, pp. 2, 5-7].

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The Western world is surprised by Japan's development also because it was not prepared to problematize the role of science and information infrastructure in its programmes and schedules of technical and technological development; more precisely, the Western world has no doubts about either scientific perception of reality (and the role of instrumental-empirical knowledge as the basis for industrial and post-industrial growth) or the extant model of organization of science as public knowledge (on which information policies of Western provenance are founded).

We are not concerned with the role, place, and effects of knowledge in Japan's and Western technological development, but rather with cultural determinants crucial in the structure and organization of knowledge in Japan. The object of our analysis, then, is not information policy and the development of information infrastructure in Japan, but rather the cultural and ontological-epistemological elements of the Japanese way of presentation and organization of knowledge.

2. THE JAPANESE WAY: INFORMATION SOCIETY WITHOUT INFORMATION

According to Western criteria, Japan is doubtlessly about to become, through development of new technologies (computers, telecommunications, and biotechnology), an 'information society' [2]. However, discussion and analysis of Japan's progress into an information society in terms of information policy—dissection of information infrastructure, factual analysis of knowledge production, and the use of databases, etc.—will not provide a complete insight into social and cultural dimensions of the informatization process.

This needs emphasizing principally because such a categorical device in itself implies cultural determinants of Western thinking† on information society. If we are to discern the specifically Japanese approach, we must first outline the premises of the Western idea of development leading to an information society.

Western thought starts with the assumption that science is a *generative principle* of technological development. On the social plane, this is manifest in *exponential growth* of scientific communities, publications, and output; science is defined as *public knowledge* (i.e., knowledge *published* and accessible to the public for critical assessment and reaching a *consensus*) [3].

Science exists as a *world of objective knowledge* that is autonomous, objective, and independent of the "subject of cognition" [4]. Exponential growth of the autonomous and objective world of knowledge triggers off development of information infrastructure for purposes of control, organization, and consolidation of information on national and international levels; the consequence is further division of labour and differentiation of roles between the primary creators and the users of information. The number of intermediaries in the exchange of knowledge increases continually, and the information process has become a primary social task and *primary process* of organization and consolidation of knowledge.

Although the Japanese attitude towards science and organization of knowledge assumes similar organizational and phenomenal forms as in Western countries, that attitude is based on different cultural principles. Science in Japan is not formed as public knowledge but as *corporate knowledge*; knowledge belongs primarily to the corporation; it is formed, organized, and used chiefly within the corporation as *inside knowledge*. In its origin and existence, scientific knowledge is neither individual nor public property: it "belongs" to the corporation. To belong is a crude word, because "belonging for the Japanese is *identity*" [5, p. 138], and that means that the knowledge is *in-corporated* at least in three ways: in organization, technology, and product [6, p. 46–59]. Organization, technology, and product are at once the place of origin and the subject of knowledge, but also a way of representing knowledge. In other words, knowledge is not an abstract category, cogni-

†By Western thought we mean the history of that European philosophical and scientific thought from which technological thinking developed, forming the basis of the total development of science and technology in the world of today.

tive matter does not exist independently either of the subject or the object of cognition;† it exists as *concrete knowledge* formed within the organization by *communication and participation*. Therefore it is difficult to identify the origin of knowledge as well as the subject of concrete knowledge cognition; in the same way, organizational, communication, and information processes are not separate, but complementary. Moreover, *information process is not primary* for organization and structuring of knowledge; information process has not been isolated as a separate process in which new social roles, organizations, and services are formed.

What is ultimately deduced from this proposition is that Japan's cultural capital creates an information society that is not based on information. A methodological attitude allowing an *information society without information* is justifiable, as it is based in the belief that information is a form of knowledge that does not exist and is not determined for all times. Information is a historical category, and so is the form of scientific knowledge; it is therefore necessary in the case of Japan to examine which cultural determinants affect structure, organization, and function of knowledge.

3. METHODOLOGICAL APPROACH

Public knowledge and corporate knowledge are two formative models for the organization and presentation of knowledge. There are several elements typical for both formative models: application of new information technologies, telecommunication networks, information agencies, some organizational forms (libraries, documentation centers, databases, and others), etc. However, many characteristics of these models differ: status and role of knowledge, place, and role of information topoi (topos (Gr.)—place), form of presentation, the ways of evaluating knowledge, etc.

This proposition of public knowledge and corporate knowledge as two possible paths towards information society, and as two processes of informatization, as outlined here, has to be elaborated. One possibility is to describe and compare the two models, pointing out the differences and isolating those characteristics specific or unique to the Japanese process of informatization. Another solution is to present, through theoretical model, determinants and constituents relevant for the structuring of knowledge and informatization process—in the case of Japan.

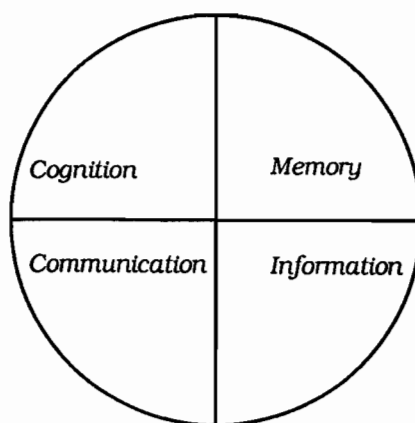
What is responsible for structuring of knowledge? Our initial proposition is that knowledge is a symbolic product determined by cognitive, communication, information, and memory functions. Cognitive function involves naming and conceiving objects, communication function involves dissemination and distribution of knowledge, memory function involves storing and protecting knowledge, and information function involves organization and selection of knowledge. Knowledge as a symbolic product is developed as a whole, and individual functions constituting knowledge are infrangibly interlinked. From the aspect of knowledge organization, interfunctional connections and relations are neither constant, nor irrelevant and negligible, because it is precisely the changing of interfunctional links, that is, the *changing of functional organization of (oral, written, machine) knowledge that is the basic characteristic and content of the informatization process* [8,9].

This means that cognition, communication, memory, and information function are recognized as *basic constituents* of thinking. Thinking is a primary process and creator of knowledge, knowledge structured by functions that take part in that process, either on a social or individual level.

But thinking itself is determined both by culture and technology. Culture implies "fundamental background knowledge" [10], which determines the position of thinking in/of the world. Similarly, technology (the application of instruments—machines and tools) is decisive for the organization and structure of knowledge, because it is possible to instrumentalize any function of thinking: cognitive, communication, information, and memory

†This notion conforms to the tradition of Buddhist religion: "the subject and object become one; they are in the state of self-identity" [7, p. 34].

CULTURE



TECHNOLOGY

Fig. 1. Model for corporate and public knowledge.

function.[†] Therefore, culture and technology are recognized as two *basic determinants* structuring the knowledge and informatization process.[‡]

Following this brief description, we can outline our model for analysis of corporate and public knowledge (see Fig. 1).

4. CULTURAL DETERMINANTS OF KNOWLEDGE

4.1 *Cultures and reality*

There must be many ways to study cultural determinants of knowledge. However, for our theme those determinants seem to be important which implicitly or explicitly determine the relation between culture and reality. How reality is perceived, and whether the dominant model of interpreting reality is mythical, religious, scientific, aesthetic, ethical, or something else, is relevant for structure, organization, and function of knowledge in that reality.

Each culture has its own response and relation to reality. Thinking always exists within or at the edge of that basic relation to reality, because *object, logic and manner* of thinking are determined and limited by that ontological relation. "Cultures, of course, are plural" [11, p. 254]. Object, logic, and manner of thinking therefore differ from culture to culture; similarly, structure and organization of knowledge are not always the same in different cultures.

In European cultural tradition, one always establishes a three-fold relation by thinking: a) to things, b) to other people, and c) to oneself. This three-fold relationship with reality enabled differentiation of the universe into three worlds: (a) the world of material objects and physical states, that is, *objective world* in which the totality of objects and their relationships are regulated in any given natural or social situation, (b) world of institutionalized social relations, that is, the *social world* by which interpersonal relations within or between social communities are regulated, and (c) the world of personal experience, that is, *subjective world* as a totality of a subject's experience. This three-fold division of the

[†]These assumptions on instrumentalization of thought and epistemology of knowledge have been elaborated elsewhere [9].

[‡]Object of our analysis will not be technological, but primarily cultural determinants of knowledge.

universe [4.10] is present in most European classifications and systematizations. It is a result of a basic division into subject and object, a division that has become one of the fundamental cultural determinants of Western (European) culture, and is reflected in language, logic, science, arts, thinking, etc.

Western thought, particularly scientific thought, insists on a demarcation lines between the subjective and the objective; objective is real, actual, related to things, objects. Objective cognition follows the character and logic of the thing itself and wants to be free of the subjective, that is, of each subjective deception and every bias. Objective cognition is expressed in generally valid categories; the ideal is therefore universal cognition, cognition of universal laws. Thus, cognition is transcendent, moving from the particular and extant to the world in general (M. Heidegger), and into the sphere of the all-encompassing possible Being as the absolute (K. Jaspers).

In Japanese culture, in its actual present, the relationship also exists between the subjective and objective, but it is solved in a different way. "Subjectivity and objectivity are absolutely opposed, but reality is the unity of subjectivity and objectivity, i.e. the self-identity of this absolute opposition." Therefore reality itself is perceived as "self-determining reality," and people do not exist independently of "self-determination of reality" [11, p. 246].

In this attitude the basic difference between Western and Japanese culture is not yet apparent, but it does exist in the way and direction of actual activity: "As for the characteristic feature of Japanese culture, it seems to me to lie in moving in the direction from subject to object (environment) ever thoroughly negating the self and becoming the thing itself; becoming the thing itself to see; becoming the thing itself to act. To empty the self and see things. . . . The essence of the Japanese spirit must be to become one in things and in events" [12, p. 869].

The principle of identity between subject and things, subject and the world, is one of the basic cultural determinants of Japanese culture. In the centre of the Japanese attitude towards the world it places "Japanese spirit, which goes to the truth of things as an identity between actuality and reality. . . . To go to things means starting from the subject, going beyond the subject and going to the bottom of the subject" [12, p. 871]. In the centre of "self-determining reality" there is "active self," which attempts to identify with things in order to turn reality into actuality. The active self can establish identity between actuality and reality if "the world of active intuition" is placed in the centre of that identity [11, p. 246].

However, in the centre of reality there is no basic principle or "powerful entity" as a dominant and determinant factor.† This centre is "inactive and empty," and it has to stay that way to maintain all the entities in a harmonious balance. All new elements that enter Japanese reality or are brought into it find their place near the centre or at the periphery, attempting to maintain their place through harmonious relationship or complementary opposites to the whole, but they cannot take the place of the hollow centre. This system of relationships which "acts as a strong but invisible support to the Japanese ideology, religious, and social structure," H. Kawai calls the Hollow Center Balanced Model [13].

European culture begins and continues with the idea of Being and its realization as the objective world. Scientific thought facilitates objective cognition and the best way to objectively master and organize reality. However, at the root of Japanese culture is not the idea of Being, but the idea of "Nothingness." Japanese thought, therefore, does not deny objective cognition of scientific thought, but rather disapproves of its eliminating the subjective from the objective world. For the more concrete is science, the more is man excluded from that world; objective cognition itself ultimately negates the subject. Scientific thought does not deny reality but actuality; it is particular rather than inaccurate. As the Japanese would put it, "Science gives the instruments of action, but not its content" [11, p. 247].

4.2 *Culture and Thought*

For Japanese thought more important and more valuable than knowledge is a cognitive act itself – by which the identity between the subject and the object is established, in

†"The thing which regulates us is neither Idea, nor commandment, nor law, nor ritualism" [11, p. 248].

which the subject's awareness is imbued with things in an attempt to understand their *kami*.† Therefore, according to Japanese tradition, the ideal of cognition is not scientific or objective knowledge, but actual knowledge in which the relation of identity with things, events, and other people is established; actual knowledge does not divide subject, and cognition is an act of identification with the objective world.

For the Japanese, to think means to integrate the content of knowledge (object) and subject of cognition; to identify with things, but also with other people. In that act of identification, boundaries between the subject and the object of cognition exist, but they are not always constant and precise, and are conditioned by the situation and parts of others [5]. Establishing and determining boundaries between the subject and the object is mediated by cultural models of behavior, which cannot be described by the terms "subject" and "object." The relationship between "subject" and "object" in Japanese society can be more accurately expressed by pairs of concepts *omote* and *ura*, and *tatemae* and *honne* [14].

As the meanings of subject and object in Western cultural tradition are ambiguous, so the pair of concepts *omote* and *ura*, and *tatemae* and *honne* are not only ambiguous, but they also change their meaning. *Omote* means *face*, but also *frontstage*, and *ura* means *mind* (also *heart*, *soul*), but also *backstage*. Those pairs occur in parallel even when only one of them is mentioned, because one cannot develop without the other. Thinking attempts to encompass things simultaneously in both their aspects, *omote* as well as *ura*, and the Japanese language is especially sensitive and appropriate for expressing this difference. Thus, for example, in describing human relations, to that pair of concepts corresponds the difference between *soto* (outside) and *uchi* (inside) [14, p. 24].

The second pair of concepts, *tatemae* and *honne*, also has several meanings; among other things, *tatemae* stands for the external (*soto*), that is, custom and social norm, while *honne* stands for internal relation (*uchi*) towards that norm, and individual motives and the manner of adherence to norm. *Tatemae* and *honne* exist as two kindred principles that are mutually conditioned, and whose meanings overlap; this pair of concepts ultimately corresponds to the division into *oyake* (public) and *watakushi* (private), although the public and the private are carefully separated in Japanese [14, p. 40–41].

An outline of basic meanings of these categories was necessary in order to suggest in which categories it is possible to follow the determinants and constituents of knowledge in Japanese culture, culture that cannot accept European division of the universe into the world of objects and world of subjects, and even less Karl Popper's idea of the autonomy of the world of knowledge.

In Japanese culture, knowledge is not an autonomous entity, it always manifests identity between subject and object through the network of relationships and interactions of people and reality. That is why knowledge always appears in the form of *concrete knowledge*, as a synthesis of actual interaction between active people and reality. That is why knowledge perhaps can be presented and described in categories of *omote* and *ura*: the external side of knowledge can be presented as information, while cognition is the inner side of knowledge. Thus, the *omote/ura* relationship may correspond to the *information/cognition* relationship, which in turn corresponds to the difference between the external, superficial side of knowledge and the inner, deep cognition of the real nature of things.

But information in the contemporary world is also *tatemae*—norm and/or the usual way of presenting knowledge, which primarily depends on convention and consensus between the interested groups of people or social communities. *Honne* actually reveals and indicates the real nature of knowledge and the way people who belong to a certain group (which uses and accepts information as *tatemae*) really relate to knowledge and cognition.

In order to understand this two-fold relationship with knowledge, it is necessary to discuss the way knowledge is structured; structure and organization of knowledge are determined by the constituents of knowledge and their interrelationship.

†Kami "is the deification of life-force which pervades all beings, animate and inanimate. Kami is the invisible power which unites spirit and matter into a dynamic whole while it gives birth to all things without exception" (Jean Herbert: *Shinto: The Fountainhead of Japan*, Stein and Day, New York, 1967, p. 25) quoted from E.C. Stewart [5, p. 154].

5. CULTURAL CONSTITUENTS OF KNOWLEDGE

5.1 *Cognition: field dependent knowledge*

The power of cognition, that is, naming and perceiving things, is one of the fundamental cultural values in Western cultures. It is not therefore surprising that cognitive and intellectual powers are equated, and that intellectual knowledge and particularly scientific knowledge is often equated with cognition. However, that kind of historical form of knowledge—intellectual and autonomous, expressed in abstract categories and proved by logical procedures—has never been appreciated in Japan.

A typical samurai calls a literary savant a book-smelling sot. Another compares learning to an ill-smelling vegetable that must be boiled and boiled before it is fit for use. A man who has read little smells a little pedantic, and a man who has read much smells yet more so; both are alike unpleasant. The writer meant thereby that knowledge becomes really such only when it is assimilated in the mind of learner and shows in his character. [15, p. 17]

The dominant form of presenting Japanese thought is not abstract knowledge, but concrete knowledge by which the identity of “subject” and “object,” subject and world, is perceived. Concrete knowledge that wants to show that identity is acquired by immanent cognition does not transcend the object of cognition itself. The fundamental characteristic of the immanent cognition is its temporality: an attempt to secure in time a form of unity of the subject and diverse opposed things. Immanent cognition does not attempt to leave the temporal unity of things and the subject, since it would mean existing outside and aside of either the subject or the things. It is not in the nature of immanent cognition to be transferable from one subject of cognition to the other.

Because it cannot simultaneously encompass all things and all subjects, immanent cognition is directed to cognition of only a part of reality, that is, cognition of genuine interaction existing between a certain number of people and things; immanent cognition starts from the individual and the particular and attempts to be “concrete intelligence” [12]. Such a form of concrete knowledge may be described as *field dependent knowledge*, knowledge that is not constituted exclusively as subject knowledge, but whose subject within a certain field spreads in all directions (e.g., organization, technology, and product are just directions of concretization of one and the same knowledge within the same field).

Field dependent knowledge is just one aspect of presenting temporal and nontransferable knowledge; you could even say that *field dependent knowledge* shows its *face front-stage* through products, organization, technology, etc., while immanent cognition as an unseen force remains *backstage*. This is an arbitrary image, because the “subject” of cognition is ignored and without it neither immanent cognition nor concrete knowledge can exist.

Therefore, we can describe such knowledge as *group dependent knowledge*, that is, knowledge that originates and is exchanged within the group. Concrete knowledge, regardless of the form in which it is presented, is always easier to transfer and organize within the group than between groups. It is important to note that in the exchange of knowledge within the group, temporal and not spatial communication channels are dominant.

Field dependent knowledge and *group dependent knowledge* are just one way of organizing knowledge, characterized by temporality and concreteness. Although the members of the Western cultural milieu often object that Japanese thought is unsystematical and nonanalytical, that its object of cognition is diffuse, and that it is hard to determine its subject of cognition—that can be refuted by arguments, starting from premises by which we described *field dependent knowledge* and *group dependent knowledge*. However, how are we to understand the fact that Japanese thinking is often described as nonabstract, mystical, illogical, nonscientific, even irrational?

The opinion of Hideki Yukawa, the Japanese physicist and Nobel-Prize winner (1949), cannot be easily dismissed. He claims “the Japanese mentality is, in most cases, unfit for abstract thinking and takes interest merely in tangible things. This is the origin of the Japanese excellence in technical art and in fine arts” [16, p. 56].

At the time when Japan based its technological development primarily on foreign technology and imported science, it was hard to find strong "empirical" arguments against this opinion. Today, when Japan has become not only a creator but also exporter of "concept technology," that is, an exporter of technologies of knowledge [17], the following prognosis of Professor Yukawa is contradicted: "the abstract mode of thinking will continue to be foreign to Japanese"† [16, p. 57].

How to explain this discrepancy? Is there a discrepancy at all? Western thought is convinced that it is possible to articulate, organize, and "produce" high technology and scientific knowledge primarily from theoretical thinking. Theoretical thinking, on the other hand, is abstract, analytical, logical, conceptual, and presented in words (written or spoken). Japanese thinking is considered as lacking those qualities, yet Japan's scientific and technological success cannot be denied. That is why the real problem and the real question is whether theoretical (scientific) knowledge, not founded on conceptual thinking, is possible?

The idea that the "abstract mode of thinking" is incompatible with Japanese thinking has nothing to do with the Japanese being able or unable to think abstractly, that is, theoretically and scientifically. (They have proved that they do it not only as well, but better than the Western world). The answer in our opinion lies in the organization of Japanese thinking;‡ we believe the communication constituent to be decisive for the organization of Japanese knowledge and therefore crucial for understanding this misconception. We shall therefore analyze the relationship between cognitive and communication constituents determining the structure of knowledge in Japanese thinking.

5.2 *Communication: image oriented knowledge*

Epistemology cannot provide an unambiguous answer about the relationship between cognition and knowledge, that is, thinking and language. There is no doubt that the function of language is to communicate a thought, to transfer a message. We can say therefore that scientific knowledge is a concrete presentation of a theory or theoretical message, that knowledge is concretization and presentation of certain scientific truths.

Language is the main factor in presentation and exchange of knowledge and it is therefore important which language is used for structuring and organization of knowledge. For semioticians, language is a system of signs which, according to its form, can be divided into large groups; languages with only sound form, languages with only visual form, and languages with audio and visual form [18]. The fundamental difference between the verbal and visual sign is considered to be in the nature of relationship between the expression and the content of the sign; in the verbal sign, the meaning between expression and content is agreed, that is, determined by convention, while in the visual sign the meaning is the natural quality of the relationship between the image and its content.

Natural languages have both audio and visual (graphic) form. Verbal and pictorial sign, word and image,§ in natural languages are mutually implied and cannot exist one without the other. The pictorial sign occurs as "natural" and understandable, only in the antithesis to conventional (spoken) sign [18, p. 8]. However, analysis of values of spoken language [19] indicates that each word (word acquires its acoustic form even if it is not uttered) is a source not only of auditive messages (tone, intonation, intensity, pause), but also of visual messages (facial expressions, gestures) and spatial messages (actual context), which all constitute parts of its semantic meaning.

We can easily agree with semioticians that in each natural language both verbal and visual signs exist; that those signs are in a complex and dynamic relationship of coming together and moving apart, and in constant transition from one world into the other. But what relevant conclusion is to be drawn from this?

†And further: "And to them any rational system of thought, generally speaking, will not be more than something mystical, satisfying their intellectual curiosity" [16, p. 57].

‡Cognitive function of thought is just one component that forms knowledge, and other constituents are communication, information, and memory.

§Semioticians often term pictorial sign "iconic sign," but in this text we shall not adhere to this terminology.

On the basis of what we have indicated about language and knowledge communicated by language, we can conclude that each knowledge (each communication object) is a *complex composition* of both verbal and visual forms; that knowledge is just a source of *concretization of message (cognition)* contained in that knowledge; that cultural determinants determine *primary form* of the message concretization (by this we mean primary communication form/visual or verbal/and not a semantic content of form—which is interpreted by users according to their needs and goals); that in the process of concretization of knowledge, only one of the possible forms contained in the communication object is concretized as primary form [20].

Primary communication form in the Japanese language is visual, not verbal sign. That is why knowledge is articulated and concretized as a series of images. Images are the primary communication form for the exchange of messages. Therefore we can say that the basic characteristic of the exchange of knowledge in Japanese culture is *image-oriented knowledge*.†

C. Stewart supports a similar argument: “Images dominate Japanese thought” [5, p. 147]. However, it is important to emphasize that in our opinion it is a communicational and not a cognitive characteristic of thought. The following statement should be understood in the same way: “In the original Japanese language, in which words were for the most part concrete and intuitive, the construction of abstract nouns was deficient. Hence, it is extremely difficult to express abstract concepts solely in words of the original Japanese” [21, p. 183]. It is “extremely difficult to express abstract concepts” not because the Japanese are unable to think in abstract terms, but because their language uses “concrete and intuitive signs” (i.e., images not suited to semantic modification and presentation of abstract concepts, as is the case with languages whose dominant communication form is verbal sign.)

A number of cultural determinants indicate that visual characteristics dominate in the Japanese language. The Japanese script is syllabic; in fact, two syllabic scripts are in use, *hiragana* and *katakana*‡ and Chinese ideographs are also used. The Japanese script is thus a pictorial script, although it is half-way between ideographs and phonetic script. Calligraphy is in Japanese culture as important as the content, and this is obvious from the fact that for a long time the Japanese preferred calligraphy to print [22], and that drawings (pictures) are often accompanied by text (poem), or poetry by drawing, and scientific works by graphs and tables.

In communication, the Japanese use sketches, drawings, plans, visiting cards, that is, pictorial signs, probably to a greater extent than Western countries; because for them “‘seeing’ is a stronger way of saying ‘knowing’” [23, p. 874]. In Japanese culture visualization has precedence over verbalization, to see over to say. The Japanese have developed precisely those visual, nonverbal communication forms.§

Empirical research shows that in face to face communication only 35% of messages are transmitted verbally, and 65% nonverbally. It is easier for the Japanese language, which relies on visual, nonverbal forms, to convey those nonverbal contextual contents than it is for the verbal languages. This is its advantage. This language, however, has some shortcomings stemming from the logic of its own organization: language in which visual signs dominate is more suitable for reception than for transfer of messages; such a language is not suitable for verbal duels: “we don’t know how to be argumentative or critical of others . . . We are not a people who can engage in long verbal vituperation, even among ourselves, so it is even more difficult to conduct that kind of verbal warfare with foreigners” [25, pp. 7,8].

On the other hand, “Japanese fuse opposites in the form of prototypes, dissolving contradictions, or contextualize opposites separately” [5, p. 147]. The Japanese language makes it possible for opposites, contradictions, etc. to be organized into wholes, images, and the

†Unlike Western thought, which we could describe as concept-oriented knowledge, that is, knowledge whose dominant form of presentation is verbal sign (i.e., word)

‡*Katakana* is a group of syllabic characters in *kana*; in this script one sign corresponds to each syllable.

§“ . . . the Japanese are more nonverbal and silence-oriented than Americans in interpersonal relations. The point is not that one way is better than the other but that cultural differences exist even in the quantity of verbal and nonverbal communication” [24, p. 6].

For image-oriented knowledge, not *factual* but *actual* information is decisive, information that can reorganize or in-form a new image and determine a new direction of development. If relevance is the basic measure of information processes, then we can term this kind of relevance *organic relevance*. Organic relevance does not evaluate only knowledge, but also the direction and dynamics of interpersonal reality, the direction of social development. Because information processes are not separate processes, the mechanism of organic relevance cannot exist as separate either. Organic relevance is in-corporated into the cultural determinants of reality.

5.4 *Memory: time-bound knowledge*

In the belief that knowledge is an organized corpus of published public knowledge, Western cultures developed in their countries an information infrastructure for collecting, storing, and browsing knowledge. In the course of time, in the Western countries a number of documental services of different profiles were developed, dealing with protection and accumulation of documents, that is, recorded knowledge.

In Japan there are also many documentation centres that are equally (or better) equipped with stock—Japanese as well as foreign, but also with information technologies for processing these stocks. Published knowledge, however, is just one of the sources taking part in the formation of corporate knowledge; published knowledge does not seem to be a decisive information source. Since corporate knowledge originates in different sources, and is itself seldom presented as public knowledge (only a small amount of scientific research done in Japan is published), it does not rely too much on documentation centres.

That is why an analysis of information infrastructure existing in Japan will provide an insight into the external (*omote*), and the internal (*uru*) would remain hidden and incomplete. As Western cultures have not the same model of organization of knowledge, since public knowledge is not organized as image-oriented knowledge, no parallel experience exists by which we could assess “systems” for storing and memorizing corporate knowledge.

Although we do not know how to store corporate knowledge, or even if it is at all possible to store and accumulate it, a basic proposition for future research into the problem can be outlined.

The basic cultural determinant of corporate knowledge is its temporality; it is temporal in the sense that it belongs neither to the past nor the future, but to the present: to the immanent cognition that attempts to establish the identity of subjective and objective world [11]. Communication and cognition, which primarily use image, are possible chiefly in the present time. The image as a rule excludes past and future tense; it is possible to convey in the image the past or the future, but “it is impossible to paint an image in the future” [18, pp. 74–75].

Corporate knowledge is that moment of the present in which actuality and reality meet. The Japanese live in the present and the future as immediate present, but they are certainly not past-oriented [29]. They are involved “with origins more than with the past, with impermanence more than with passage of time, and with the innovation in technology rather than with antiques” [5, pp. 142–143].

But how then to memorize the present and also the past knowledge? We can honestly say we do not know the answer. We can only guess that the function of memorizing and storing knowledge is probably taken by the organizational form of institutions and corporations. Corporate knowledge is live knowledge, stored in the whole organization (corporation), laid into the organization as its body, and that body develops and changes with the growth and development of knowledge. Corporations grow and die with knowledge; similarly, knowledge that cannot meet specific social needs, cannot be subjectivized or objectivized, and cannot function as corporate knowledge, falls to pieces like an image in the broken mirror. Broken pieces of the picture are not stored.

6. CONCLUSION: PATTERNS OF INFORMATIZATION

This was an attempt to grasp the place and the role of knowledge in Japanese culture; we have dealt neither with information policy nor development of information infrastructure and its effect on technological development of Japan.

We have concentrated on cultural prerequisites to the exchange of knowledge, that is, on cultural, ontological, and epistemological principles on which knowledge is organized in Japanese culture. This is in fact a problem of the epistemology of information science. Since that discipline is still nascent, it was up to us to decide which cultural determinants and constituents are decisive for understanding knowledge.

We started from the assumption that in understanding organization and exchange of knowledge, those determinants are decisive which regulate the relation between culture and reality—in fact, between culture and thought. As basic constituents of knowledge we have identified cognitive, communication, information, and memory functions. Thus we have arrived at the model described at the beginning of this text.

This model served as a basis for the analysis of culture, as formative patterns for exchange of knowledge. Formative patterns of knowledge produce different types of knowledge, depending on the way particular cultural determinants and constituents of the model described are determined, and on the character of their interfunctional connections.

Public knowledge is a dominant form of knowledge in Western countries and corporate knowledge in Japanese culture. Those two forms of knowledge differ in their place, role, and function in Japanese and Western societies. Cultural determinants and constituents are decisive for differences in the structure and form of public and corporate knowledge. We shall not repeat the basic characteristics of corporate and public knowledge, but present them in a graph (Figs. 2 and 3).

Communication and cognitive functions are decisive in the formation of corporate knowledge. Analysis of cultural determinants of communication and cognitive functions indicates that their domination is culturally and not technologically determined; by that we mean domination of communication function over information function; visual communication over verbal; image over concept; personal contacts over nonpersonal written communication.

Information and documentation function have not developed as primary functions in spite of the available and developed information technologies. Reasons are also cultural, and not technological: corporate knowledge is a form of concrete knowledge in which “abstract” and “empty” categories presenting knowledge processed by information technologies are of secondary importance.

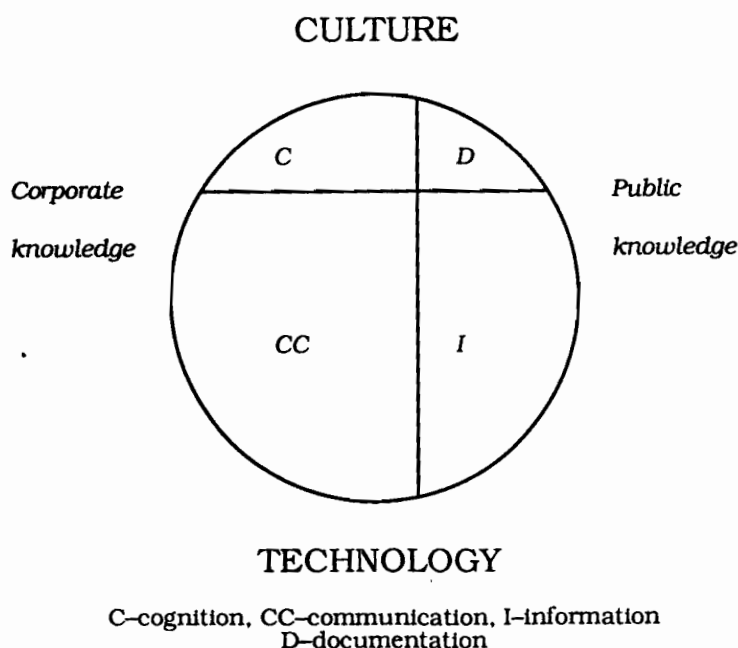


Fig. 2. Characteristics of the Japanese model.

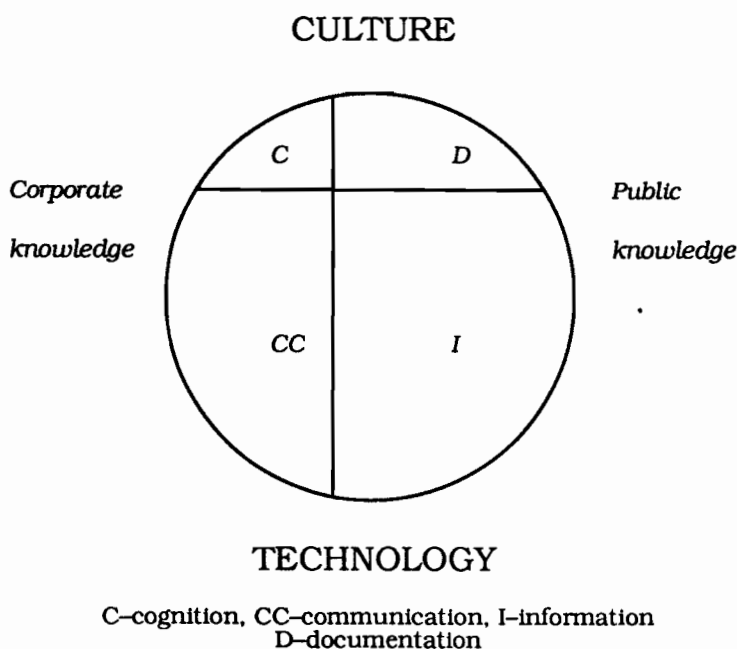


Fig. 3. Characteristics of the Western model.

Apart from that, concrete knowledge is incorporated into the whole organization, since it is impossible to be separated from the subject (this is why we have termed it group-oriented knowledge)—and this is why in our opinion documentation centres cannot take over a primary role in organization and distribution of knowledge.

Instrumentalization of all functions, particularly information function, is decisive in forming *public knowledge*. This form of knowledge, however, is also culturally and philosophically conditioned, because it starts from the assumption of: the existence of objective knowledge; the autonomous existence of objective knowledge independent of cognitive subject; the distribution of labour and the differentiation of social roles on which the information infrastructure develops; the existence of public knowledge as an autonomous subject of those services: and so we speak about information market, information economy, information products and services, etc.

This complex of culturally determined functions brought science and technology into the centre of social development. This is why science and technology are able to modify all elements of Western society and Western culture, according to patterns of scientific and technological revolutions.

“Cultural capital,” on the other hand, has remained in the centre of social development in Japan (the metaphor of Hollow Centre Balanced Model seems extremely appropriate for summing up the difference between the Japanese and the Western countries), and science and technology are arranged around that hollow centre, determined by cultural capital. “Science gives the instrument of action, but not its content” (K. Nishida). The paradox of the Japanese way is that, while not recognizing information as a form of alternative knowledge, Japan is aware that technological development and an “information society” are just one of the possible ways to Japan’s development.

The description of cultural determinants and constituents of corporate and public knowledge is just an outline of a possible theoretical approach, presently still lacking empirical evidence: both empirical research of cognitive, communication, information, and documentation functions in Japan, and intercultural studies between the Japanese and the Western (European) societies.

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