LAWS AMONG INFORMATION, MEDIA AND HUMAN ACTIONS

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Abstract

Information is food for human thought, assets for industrial organizations, and power to move states. We associate with information only through media. It is also true that information is not equal to the fact or the original idea. Therefore, an unquantifiable number of information contents are produced by a fact or an idea.

This is a study on relations among information, media and humankind. Laws among them are described and 50 cases are referred to out of the 500 from which the laws are induced. The laws discussed here are found to be based on three natural reasons: 1) Information coexists with media. 2) Information is not equal to the fact. 3) Knowledge from information needs the help of experiences. Also discussed is how a group of humans act together based on information and experiences in terms of organizational behavior, and the bounds of information-based knowledge. Modern progress of media gives human speed and globalization of information transmission so that enterprise competition is likely information competition today.

On the other hand, media diversity is causing difference of background knowledge among generations, in stead of regional difference in former days. It should also be noticed that people need the help of experience-oriented knowledge, which that can not be transferred by media, in order to turn the information-oriented knowledge into action.

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I. Introduction: General Overview of Media and Contents

- Media or contents do not mean substance, but relative functions to contain or be contained.
- Media are chosen according to how their contents are to be used.

When a child is given a toy wrapped up in department store wrapping by his father, the wrapping is a medium and the toy is a content. Generally, a medium is an enveloping substance in which something exists or is carried, and a content is that which is contained in the medium. In the case of wine glasses stored in a box, the glasses are the contents and the box is the

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FIGURE 1. EXAMPLES OF CONTENTS AND MEDIA

Contents	Media	Object
Wine	Barrel	Brewing
Wine	Glass	Drink
Glass	Box	Transportation
Poison	Wine	Assassination
Drama	Movie, Novel, Cartoon	Expression
Knowledge	Software	Reproduce
Software	Hardware	Execution
News	Paper, TV, Internet	Inform
Music	Score, MP3, Song	Expression
Christianity	Bible, Preaching, Hymn	Mission

medium. In the case of wine in a glass, the glass is the medium and the wine is the content; with poison dissolved in wine, the poison is the content and wine is the medium. In the case of information contents, TV programs are carried on radio waves, news or music are contents in TV programs, human speech is content carried on a telephone network, novels are contained in books, and religious teachings are carried in media such as the bible, preaching, hymns and sometimes dance. Human knowledge in business is now expressed in the medium of computer software. In this case, the business knowledge is the content and the program is the medium, the application software works on an operation system and the operation system runs on the medium of computer hardware. All these cases show that the concept of medium or content does not necessarily refer to a substance itself, but can also mean a relative status to contain or to be contained; a substance can be a content in one case and a medium in another.

Furthermore, it should be noted that humans must always access information contents through media; information can never exist without a media. Speech is transmitted by vibration through the air, electronic digital pulses, compact disc recordings. We can not separate a sentence from printed paper or data from a floppy disc as the child takes out the toy from the wrapping paper or as we extract salt from sea water.

Thus, it is interesting to look at the relationship between information contents and media and to examine how consumers access information through media. I asked two hundred students at Hitotsubashi University and in the graduate course of Doshisha University in 1998 and 1999 what they find or feel between information and media. I was careful to collect cases during the two years from the view points of media and contents business. About 500 cases were collected and sorted to find 13 laws from these cases.

The detailed laws were found to originate from the following three very natural laws; 1) Information contents can not exist without media. 2) Information is not equal to the fact or the original idea. 3) Humans need experience-oriented knowledge as well as information oriented knowledge in order to act. The three natural laws are discussed in the following chapters.

II. *Information Contents Can not Exist Without Media.*

Figure 2 shows the relationship between contents and media. The x axis shows the popularity of the media and the y axis shows the consumer demand for the contents. Poor side

FIGURE 2.   GROWTH OF CONTENTS AND MEDIA

Contents

Rich

C → A

C ↓

D ← B

B ↑ A

D ↗ A

Poor

Media

Poor   Rich
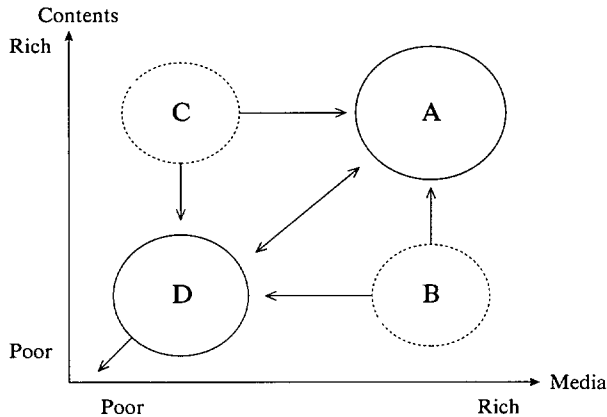
of each axis means that the media or contents business needs operating funds as it does not have enough consumers. The business may be about to so bankrupt or else it may have just started to grow.

In some cases where the business operation is supported by the government, the media or contents keep rich even if they do not generate sufficient income by themselves. The absolute plots on the axes are not plotted arithmetically, but they are plotted relatively. Within the rich or poor zone, a coordinate's position is decided according to the population of the medium or the demand for the content; it is not decided according to the financial condition of the business operation. In other words, the x axis shows the availability of the medium and the y axis shows the demand intensity, viewed from consumers' perspective.

In the A zone, both contents and media are rich when the two make the demands of each other and the business of providing contents and media services go well. Once a combination of the contents and the medium enters the A zone, the business will grow in principle. Discussed later is what happens when a business leaves the A zone, such as with pager services or old computer operating systems.

In the B zone or the C zone, the business is unstable and will move to the A zone or the D zone. When attractive contents collect in a medium in the B zone, the business will shift to the A zone. If the medium fails to get the attractive contents, the consumer will leave the medium and the business will go to the D zone where the media operation is difficult financially. In the case of content in the C zone, the business will move to A when the content get on a rich medium or is converted to a rich medium. However, it may move to the D zone when funds dries up to create or maintain the content.

In the D zone, there are two types of business. One type is businesses that have just been established and that are aiming to climb up to the A zone like cyber shops on the internet. The other type is businesses that are disappearing, such as pager services, the telex networks, or hierarchical databases.

The business movement in the plane of Figure 2 is interesting; success in climbing up to the A zone or failure and falling out of the A zone is caused by competition, social paradigm changes, or technological innovations.

Following are 4 laws and examples of media in the D zone climbing up to the A zone.

(Law 1-1) Gather similar kinds of poor contents or poor media to turn them into rich contents or rich media.

(1) Fliers for recruiting or for renting a house that can be found on windows or walls provide poor contents, and there are no consumers to pay for the information on these fliers. However, when information on houses available for rent is collected and edited in a magazine, the contents become sufficiently rich that consumers will pay for them. Viewed from the information provider's perspective , the rich medium of the magazine, which has thousands of reader, is also worth paying for.

(2) Receipts information at the checkout counter of a retail store has been used only for accounting and the daily stock supply. Data warehouse and data mining technology have made it possible for a venture company to accumulate the receipts information from thousands of stores and sell information on consumer trends to stores and manufacturers nationwide.

(3) In 1998, just after the satellite broadcaster JskyB started its service in Japan, Rupert Murdoch, the sponsor of JskyB succeeded in integrating their service with PerfecTV by devising a new receive antenna that receives commonly the two different waves. Thus new broadcasting medium of Sky PerfecTV was founded. Although there was another satellite broadcasting company called DirecTV in 1998, the JskyB and PerfecTV combination out of the three had a physical reason of beam angle difference to make the common antenna easier; Stars of JskyB and PerfecTV are on 124 degree and on 128 degree of the east longitude each. On the other hand, DirecTV is located on 144 degree, further angle than the others. The new integrated media of Sky PerfecTV provides more contents than DirecTV, and, in August 1998, Sky PerfecTV, which had 1.3 million receivers, bought the rights to broadcast the so called killer contents of games in Serie A of the Italian soccer league, which were being broadcast on DirecTV's 30 thousand receivers. DirecTV was purchased by Sky PerfecTV in March 2000.

(4) If a TV program introduce a delicious sushi restaurant, it is simply an advertisement. When several unique sushi restaurants are shown in one hour, it becomes an interesting program for viewers.

(Law 1-2) Prepare rich contents or media first and the other will follow.

(5) U.S. broadcast enterprises invested in the satellite broadcasting business of Star TV in Hong Kong and MTV in Indonesia providing contents as news or movies made in U.S. in 1991, and the businesses have been loosing money 'heaps and heaps' expecting the next century to break. The Chinese authorities had a policy of 'no sex, no violence, no news'. Star, meanwhile, had no formal distribution network in China, despite having an estimated 30 million viewers there. Demand for televisions in southern parts of China where the media and contents of TV had previously been poor. The U.S. investment indirectly stimulated the manufacturing televisions in China. A domestic cable channel, China Entertainment TV (CETV) started up in 1994 and was said to be proving 28 million homes with contents acceptable to the authorities. Local viewers enjoyed the variety shows, game shows, dramas, music, and documentaries. In this case, it should be noted that China did not need early-stage investment in contents to penetrate the media.

(6) ARPANET or the UNIX operating system was offered to noncommercial organizations free of charge initially. Interesting is the driving fund to develop and spread them. ARPANET was developed by DOD (Department of Defense) and the cost including its operation was met by taxes. The UNIX was developed by AT&T (American Telephone and Telegram), a big private company, for their own use, and the system distribution to others was not costly as it is software. And the nonprofit initial users played role to make application contents rich. It should also be taken into account that these two media were launched in US where the information technology culture was most advanced.

(7) It is surely troublesome not only for management but also for consumers to handle small coins at laundries, coffee stands, vending machines, highway toll gates, public telephones, and on buses or in subways. E-cash is undergoing trials to solve the problems commonly by an IC card and experiments have been run at many places, starting with Mondex in Swindon. There are several reasons why most of these trials were not successful. The issue of missing consumers' premium, that of security versus handling speed, that of a shop's consumer record versus consumer privacy, and that of availability. The last one means that the money card can only be used in a restricted area and at particular shops equipped with a card reader. Looking at it from the shop's perspective, few customers have these cards. The biggest barrier to the popularization of the e-cash is the building of a nationwide infrastructure on which standardized cards can be used. Telephone cards or rail cards have become popular among consumers because huge amount has been invested in these systems. If we consider the card receiver network to be the media and the prepaid card to be the content, why have these telephone cards or rail cards, which have already grown popular, to shops not been transferred using new card readers?

(Law 1-3) Media will proliferate in cooperation with contents when the business model is contrived.

After the success of Nintendo's Fami-con games business, SEGA and Sony also went into this business. Each of their strategies is similar in that it is based on the provision of a low-cost platform for a game machine that is connected to a television. Differences arise in how they cooperate with providers of the game software, however.

(8) Nintendo's Fami-con game business had two features, The first is that Nintendo is responsible for the platform and the distribution of the game computer. The second is that Nintendo exercised the right to allow providers of game software to use the platform. Through the permission process, Nintendo did two things. One was to charge for the platform use under the name of read only memory printing, and the other was to inspect the software quality closely as they were aware that the ATARI game business was ruined by poor quality of contents.

(9) SEGA's Saturn and Sony's PlayStation have an open the contents policy; software providers can sell their game software without the permission of the platform provider. This open policy was needed because these late movers in this industry had to develop contents quickly. And the policy was successful for software providers to go into their platform. The first cause of PlayStation's win was the success of Final Fantasy as a killer content on the media. SEGA Saturn had trouble with their platform which allowed Sony to get a strong lead. The open policy can lead to low-quality contents , so Sony is continuing to examine software bugs in the PlayStation and PS2 market, where there is in fact some low-quality software. Sony's another contrivance is a critical one to prevent used game distribution to take contents providers into custody.

(Law 1-4) Strength in application knowledge means is strength in the software business.

(10) An application package is knowledge itself written in a programming language. In other words, software is considered as a medium to carry and reuse the knowledge. For instance, Micro Soft Power Point is used to deliver the methods of presentations and ERP (Enterprise Resource Planning) packages are said to propagate excellent companies' business procedure to other companies. Therefore, most popular software in a field will be developed in firms which have content knowledge. It is the reason why most data base management packages, internet browsers, mailing tools or web hosting software are developed in the U.S., and most manufacturing robot control software or animation software are developed in Japan.

When we think software to be a medium to carry contents of knowledge, the law 1-4 is

FIGURE 3.   SOFTWARE AND BACKGROUND KNOWLEDGE

Background Knowledge	United States	Japan
Computer Use at Business	Operating Systems, Data Base Management Systems Data Mining Enterprise Resource Planning	
Internet	Browser Mailing Software	
Manufacturing		Robot Control Software
Cartoon Culture		Animation Software
Automobile	(Car Navigator was regulated)	Car Navigation Software
Home Electronics		<Digital Home Electronics>

reasonable. Figure 3 shows where popular software was developed or will be developed in the U.S. or in Japan compared with the background knowledge. Although Micro Soft is trying to develop a software market to control home electronics totally, the final winner at the market will be in Japan, such as Sony, Matsushita, Toshiba or Sharp and not Fujitsu. Exception is Car Navigation Software. It is a type of Geographic Information System (GIS) and the U.S., the most automobiled country, should be strong at the software for it. The reason why Japan is strong there is that U.S. regulations inhibited the car navigator for safe drive purpose.

(Law 1-5) Rich media may become poor due to competition, shifts in technology, the superannuation of contents.
(Law 1-6) When you intend to take over another medium, you should support the contents in that medium.

(11) It is a very conventional procedure for computer vendors to convert application software and data base contents into the new system from the existing system when they take over a customer system from competitors. Though the recent open software architectures have made the customer contents easier to move to another vendor's system, Fujitsu, NEC, or Hitachi have provided conservative municipalities with office computer systems that have their own software vendor architecture or data base, which is effective strategy to disturb another vendor to take over the custom.

(12) Paging services will become less popular because of the introduction of mobile telephones. All pager functions are supported by mobile phones.

(13) The telex network, which has been in operation for more than 50 years, is disappearing because of the Internet.

(14) In Japan, when a subscriber to a carrier shifts to another carrier, for instance from the conventional network to a CATV telephone, the directory number must be changed. On the other hand in the U.K., the CATV telephone growing rapidly where the directory number does not change.

(15) Consider newspaper subscriptions. News contents are very similar among newspaper publishers in Japan, but each newspaper has one or two novels appearing serially. The series of novels prevent subscribers movement from subscribing to another paper.

There have been two types of media: Stock media or Flow media as Figure 4 illustrates. Books, compact disks, and videos are stock media where the contents are immutable and

FIGURE 4. TWO TYPES OF MEDIA

Media Type	Stock Media	Flow Media
Examples	Book, CD, Video, ···	Broadcast, Newspapers, ..
Transfer	Asynchronous	Synchronous
Received Time	Dependent on Consumer	Dependent on Provider
Contents	Immutable	Changing

received asynchronously. On the other hand, magazines, newspapers, broadcasting or tele-phone are flow media dealing with contents which are temporarily valuable.

(Law 1-7) Because of the abundant supply of media, consumers use a medium without distinguishing between flow information and stock information.

(16) When audiences have something else to do, they miss a TV news program at the scheduled time. In these situations, a video recorder helps them to see it afterwards. An answer machine also records calls when we are not at home.

(17) One popular URL that can be accessed from an i-Mode mobile terminal is a web page teaching how to feed a cat. This is information that would previously been delivered in a book.

(18) A data warehouse stores detail on sales records for a long time. The records were previously discarded after closing accounts.

(19) More than 100 satellite broadcasting channels and CATV channels are providing very old contents or immutable contents focused on special interests, as fishing, baseball, rock music, racing, movies, cooking, professional wrestling. and distance education.

(Law 1-8) Multipurpose media, like a PC, will be seldom used after an object tuned media appears.

Mr. M. Kamijo, a director of Sony Products-Lifestyle Laboratories and Dr. Kazumasa Shinjo, a physicist at Advanced Telecommunication Research Laboratories, have agreed that the current personal computer, which has many keys and menu bars operation, is an early stage in the development of computers. In the future, such a universal tool will become like a piano, which is found in many most homes but is played seldom or just used for children's lessons.

(18) The use of the mobile telephone to access the Internet, like the i-Mode terminal, has increased tremendously since the beginning of 2000, where consumers' behavior is personalized likely at satellite broadcasting. Most people have memorized a few favorite URLs in the terminal not for general purposes. Each user selects solidly a few out of thousands of URLs, for instance, banking, ticket reservation B2C, parking space information for drivers, information on sea conditions for surfers, fortune teller games, and statistics. Many users subscribe to the network for special contents purposes not for general Internet as is the case with the PC.

(19) Though a car navigation terminal has the multimedia computer functions of TV receiver or Karaoke player, it is usually only used to determine a location.

(20) the 'Walkman' is designed for listening recorded music only is more popular than the general purpose tape recorder.

The Windows operating system is provides users with all kinds optional functions or menus kindly. It surely includes necessary functions for each, but most of functions provided are unnecessary for each. I am now using a Windows-based PC that has 95 keys and 14 cable connection holes for hardware, and innumerable icons and pull-down menus on the screen

FIGURE 5. COMPUTING TRENDS
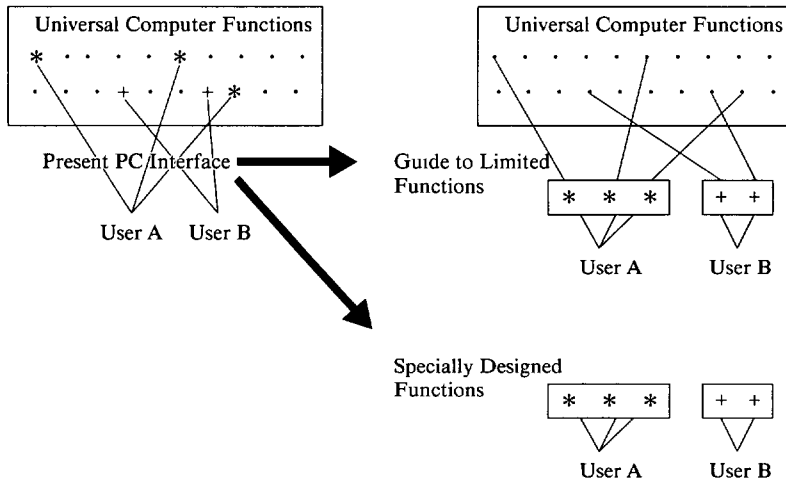
which sometimes bother most users to set off unnecessary functions. It just same as going to office every day by camping trailer car, or walking around in a department store looking for a camera film. As the information industry is specific at the point that mass production is not costly, it is right for vendor side logic to deliver universally unified software to any consumers, but the logic is not comfortable for uses. The increasing popularity of car navigation systems, i-Mode mobile terminals, and game machines suggests that consumers will move from the PC to object-oriented computers. Figure 5 shows two development trends. Network computing, Web-computing, or i-Mode mobile computing are part of the trend illustrated in the top part of the figure. Game machines, car navigation systems, and robots are part of the second trend.

III. *There Is no Information Equal to the Fact.*

- Information express only a part of the fact, or just a shadow of the original fact.
- Information is understood differently by recipients.

Information is just a shadow of the original world as pictured in Figure 6. It is necessary to add explanation to the term of original world. An original world is a real world like a social event; it can be an imaginary world like ideas in the mind.

In many cases, as we try to understand the original world through the information world, it is impossible to understand the original world exactly. More information will lead us to better understanding of the invisible original world, we think. (Figure 6).

(Law 2-1) Innumerable information contents can be created from a fact. And human seeks more information to understand the fact more.

(21) How you explain what a automobile is to a person who has never seen one ? Would you write sentences to him with illustrations, or would you show him a video? The best of all, off course, would be to show a real automobile.
(22) When an earthquake occurs somewhere, we quickly get a lot of information through news

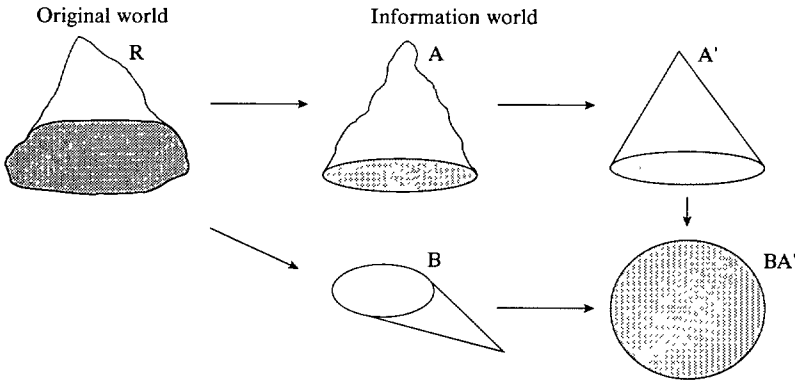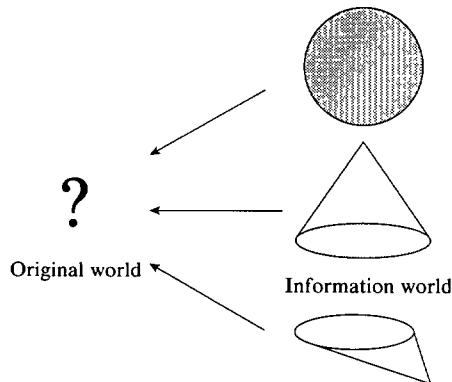FIGURE 6.   ORIGINAL WORLD AND INFORMATION WORLD

FIGURE 7.   INVISIBLE ORIGINAL WORLD

papers or TV news programs. All of these information express just special aspects of the event.

(23) Regal documents can be thick and difficult to understand as they are carefully written to apply to many situations. In spite of this effort, court decisions sometimes take a long time because of interpretation differences.

(24) A musical score sheet does not express correctly what the composer had imagined. Furthermore, music played based on the score may be different from what the composer imagined. Concerning sound information, high-fidelity audio devices have been developed recently. The sound is still essentially different from the original, as the word 'fidelity' implies.

(25) Though you may think a photograph of Thomas Edison faithfully represents what he looks like, thousands of his photos are not enough to express whole of him exactly.

We do not yet have information media to transfer all of the wisdom derived from experience. The Zen philosophy of 'words and symbols can not express the truth' is understood through the evidence detailed above. Information is like a shadow of the existence or the original idea. So, we create innumerable pieces of information from the original world as Figure 6 illustrates. According to the law of Entropy Growth, we create secondary informa-

tion like A', B' or n-th order information BA'. In the Figure 6, each shape is an abstract expression. These may be sentences, a speech, a photograph, or a drama.

The following examples show that information contents not necessarily express a fact; rather, they express an aspect or a quite different aspect of the fact, when we try to understand the fact or manage something based on given information.

(26) At big firms, many top executives use objective figures to indicate their business strategy, which is measured and reported by middle managers, and the figures should be attained by employees. When NTT (Nippon Telegram & Telephone Co.) was privatized in the 1980's, Mr. Shinto, the first president head the new privatized company, introduced many new management policies to change the bureaucratic operations. One of them was to reduce the amount of paper copied in reporting to managers. All divisions were ordered to report the copy machine's counter total monthly. The president wanted employees to focus on customers, not their managers, and he wanted them not to be simply satisfied with producing thick reports. The organization was so bureaucratic as quick to reduce the figure. The president was satisfied by the reported figures, without knowing facts. In divisions, when the copy total approached the imposed limit, the copying was ordered to be done the office outside. In a very rare division, this is not a joke, a manager ordered the replacement of A4 sheets with A3 sheets in all copy machines. After being used for copying, the copies were then cut in half.

(27) Holding intellectual property is an important strategy for a company. R&D divisions in many firms are assessed by counting the number of patents applied for over a period. When not enough have been applied for , the manager pressures engineers to write more patents by the end of the period. As a patent is accepted if it is new, it is not such a difficult matter for an ordinary engineer or researcher to write a patent, unless it is to be used in business. This is the reason why there are so many sleeping patents in big companies. The number of patents is misunderstood information that is treated as a measure of how creative a team or a person is or not, by top managers or scholars who have no experience of the real work.

(28) Introducing computer systems to reduce human resources is a modern management objective. A local office was permitted to invest in upgrading their computer system under the condition that they reduce the number of operators by 30%. After the upgrade, the number needed to operate the system was reduced by only 10 % due to an estimation error. The number of employees was reduced by 30 % as planned and the shortage was filled by temporary workers. That company does not account for the wages of temporary workers as employee payments. Top managers of the head quarter evaluated the number of employees after the trial and on that basis recommended the new system to other offices.

(29) A temporary office help agency with 2,000 temp staff stuffs on file selects appropriate people for a customer's request based on a database that describes the workers experience: education, job career, language ability scores, computer skills, personality, his/her ambitions and so on. This information was based on stuff's statements, interviews, and tests. Customers sometimes complained that the workers ability did not match the request, so the agency examined the relationship between the personal records and the evaluation score from customers. They found no correlation between the two.

(30) Similar experiments were done at NTT Electronic Communication Laboratories. When the laboratories take on new researchers each year, they examine university scores, mathematical ability, knowledge of electronics, and IQ scores of applicants. The data files are kept by the personnel section. The personnel decided to compare the files with evaluation data ranking the performance of researchers 5 years after joining the laboratories to see if there was a relationship between the entrance tests and the performance results and improve the entrance tests. They found no relationship between the ranking results and the data on the entrance examinations. This implies

one of the following possibilities : 1) the entrance examination tests cannot reliably be used to assess a researcher's ability, 2) the researcher ranking is based on a mis-evaluation, 3) both measurements are incorrect, 4) the researchers' abilities have changed over the 5 years.

We find more cases how difficult it is to grasp the fact through information outside the business world.

(31) A physician examines a patient by using information on body weight, temperature, the pulse and so forth. X-rays or ultrasonic waves are also used to make internal examinations and prescribe treatment. Though these information technologies have been developed over thousands of years since the primeval ages, the insight is not always correct.

(32) We are sometimes interested in what happens after we die. Mr. Takashi Tachibana, a documentary writer, interviewed people who had been medically 'dead' in Japan, India and the U. K.. They were Buddhists, Hindus, and Christians. Some of them reported similar experiences of their death as follows. 'I walked through field of flowers and entered a dark tunnel. I found the way out ahead of me which was glittering with gold. Before reaching the way out, I was called by someone and came back.'

According to our usual process to grope the fact trough information, the tale of the other world is same as Columbus tale of America discovery in 15 century, or newspaper articles today. It depends on you to what extent you believe the media of the death experienced persons, Columbus or newspapers.

(Law 2-2) Contents which sell well in one medium will sell well in another medium.

(33) In the 1930s, there was a popular storyteller called Harudanji who played at the Yoshimoto theater in Osaka. The theater was always full during his shows and recordings of his stories were sold on records. Radio broadcasts started around this time in the area and the broadcasting company planned to let him speak over the radio. The theater managers, who feared losing the theater audience and their record sales, built a barricade in front of the Osaka broadcasting station on the scheduled morning so that he could not get in. The broadcasting staff outwitted them and took the star storyteller to Kyoto station in the next city and succeeded in having his talk aired. After the broadcast, the theater audience and record sales increased even more despite the initial concerns of the theatre managers.

The story is true even today.

(34) No one doubts that the number of football or baseball spectators going to see live games will increase because of TV broadcasting today. Most spectators at the stadium will again see the game on the sports news after coming home. Why do they do this? We are not satisfied with the information given by contents in a medium because the contents do not express all of the event. We are not checking to see if the TV station incorrectly broadcasts the game or gives a different result. We obviously want to know more. Then, we read the article in the next morning paper again and look for new information again.

(35) A best-selling novel is expected to be made into a movie or TV drama. Pocket Monsters were initially a TV animation cartoon and the content was converted not only to a movie or still picture cartoon in books but to speaking toys, a card game, and character goods. Although the novel was a fiction and Pocket Monsters do not exist in the real world, we want to know more and more about the characters or the scenario through the contents given by the media.

(Law 2-3) Recipients of information understand it differently depending on their background

knowledge.

Misunderstandings can occur even between parents and their own children. It is essential issue that communicator's message is understood differently by the recipients even if the word 'message' implies all information sent by communicator such as face expression, eyes movement, gesture or intonation not only spoken words. Since the World War II, intercultural communication has been researched in such fields as social science, psychology, linguistics, and philosophy. Researches have pointed out that differences in culture or customs between nations causes the misunderstandings.

> (36) Take color for example, yellow has a religiously noble image in some nations, or sensationalist impression in other nations.
> (37) A person in history can be a hero to some people, but may be a villain to others. Anchong Geun, who assassinated Hirohumi Itoh, the first prime minister of Japan, in 1909, is respected in Korea as a hero who resisted Japanese rule in their country. This is not so in Japan.
> (38) Parents try to understand what their children are thinking every day. Most children say 'Mom does not understand me', and parents are often astonished at the unexpected behavior of their son.
> (39) Good speakers will consider the audience interests, knowledge level, and occupations before starting to select a scenario or terminology.

The misunderstanding issue is not restricted to culture differences between nations but lies between people, as no two people share the same background knowledge and consciousness. The contents of advertisements or a politician's speech should be revised according to the audience's background knowledge, taking into account cultural associations with the words. Customer relationship management (CRM) systems, which adopt an one-to-one marketing methodology, respond differently to consumers' requests in consulting the customer database.

(Law 2-4) Consumers cluster information contents by media. Media cluster human thoughts.

> (40) Ginza is a shopping disrict well known as where high-quality goods are sold in Tokyo. One shop tried to sell their entire stock of sweaters at 5,000 yen each, but customers did not touch them. After someone advised the shop keeper to put the price up to 20,000 yen, the stock was cleared soon.
> (41) A synthetic fiber maker placed socks on the market that would not smell after being worn through the drug store channel first. This did not sell well. After putting the socks in clothing stores, they started selling.

Above two are not cases of information contents. But, it expresses a medium is associated in a consumer's mind with a class of contents and the consumer accesses to the medium expecting the class of some contents.

> (42) When a well known sport man is found in a magazine, we guess the type of news, good or bad, by the name of the magazine he appeared.
> (43) A viewer will turn off the TV when an educational program appears on an entertainment channel, and will do the same when a comedy appears on an educational channel.
> (44) Few people will enter a French restaurant in area known as a 'China town', even if it has no competitors.
> (45) Ordinal business use applications gather to Windows PC and graphic and multimedia applications to Mac PC. Both are supported by two groups of computer users: those who swear by the cute Macintosh and those who believe Windows will one day rule the PC world. Though SGI, which has established its own market in computer graphics workstations, is struggling to find another market, the biggest barrier will be computer users who imagine only Graphics from the

name of SGI.

Consumers access information only through media, so the type of information that can be accessed is limited by the type of media owned by consumers. When there were no TVs, no computer networks, and little international trading or overseas travel, information media available to children were mainly their parents, grandparents, teachers at school, and books and articles in newspaper. The toys were traditional ones given by grandfather. Human thoughts or cultures were clustered depending on the region and shared with different generations of people. Today, we have access to a huge variety of global media: hundreds of satellite TV channels, millions of internet URLs, TV games, and videos from many countries. Many homes have TVs. These media have it made difficult even for family members to share their thoughts. Also, as new media appear so frequently, it is natural that familiar media are divided by generation. The media gap is becoming such a serious matter for mankind to the extent that wars might occur between generations of countries, not between countries in future.

IV. *Bounds of Information-oriented Knowledge*

It is essential for a person or a business organization to turn the knowledge gained from the modern advanced media into action. We decide to act not only according information-oriented knowledge but also according to consciousness such as courage, hungry mind, curiosity or fear. As the definition of consciousness is vague, Zen philosophy teaches us clearly the difference between knowledge expressed in words or symbols and consciousness, by acquisition process. Knowledge may flow from a higher place to a lower, but consciousness never flows between people; rather, it is born in each mind independently by their own experiences. Zen also teaches us that the truth can not be expressed in words. The philosophy is explained by the information processing model of the human mind shown in Figure 8, where the lower box shows the functions we share with animals. The upper box shows the logical processing for input words or symbols that we learn from after 3 years on. According to the philosophy, the upper box processing is so uncertain that assist of the lower box function is

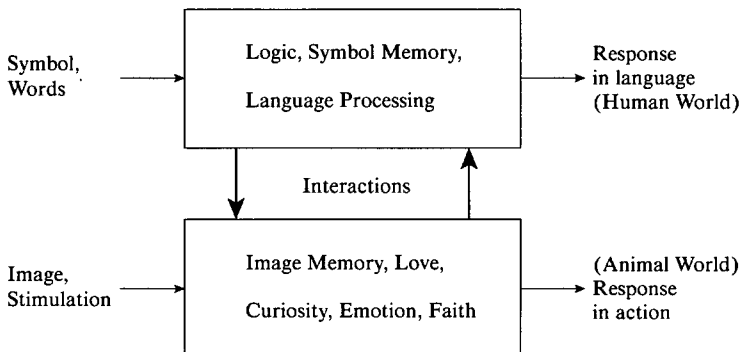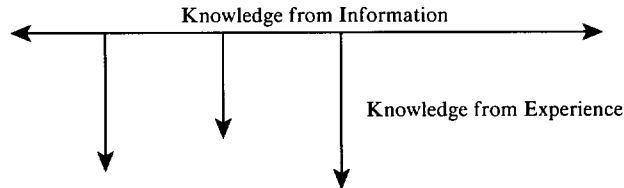FIGURE 8.   HUMAN THINKING IN THE ZEN MODEL

FIGURE 9.   TWO TYPES OF KNOWLEDGE

Knowledge from Information

Knowledge from Experience

essential for human total thinking. Then, the Zen temple gives pupils mainly disciplines with few lectures in order to train the lower box functions.

Similar considerations are found in the book 'The Knowing-Doing Gap' written by Jeffrey Pfeffer and Robert I. Sutton in 1999. They first point out that knowing and doing are quite different matters, and discuss when the gaps are caused and how to turn knowledge into action, focusing on business management. They argue that best knowledge comes from doing. This is a unique theory because in western countries people developed modern civilization by making the most of symbolic logic, and praised presentation techniques of an idea or a plan, and sometimes do rhetoric-like discussions. In Japanese firms, on the other hand, results or products have traditionally been stressed rather than the presentation, even though they have begun to acquire smart presentation techniques under the influence of western ideas.

Though consciousness, comes from experience, is essential for action, the experience time is limited for a person who has only 24 hours a day. We can not experience two things that happen at different places at the same time, or events in history before our birth. Then, humankind is obliged to depend on knowledge from information that is wide spread and now changes fast through media as Figure 9. People ask efficiency for media in order to get more knowledge from information in limited hours. On the other hand, efficiency is not the matter to be discussed when people acquire experience. People should spend hours depending on the given circumstance.

Another knowledge classification is given in 'Zen and Japanese culture' written by Daisetsu Suzuki in 1939. Mr. Suzuki studied philosophy and lived with discipline at a Zen temple before teaching at Columbia University. He is known as the first asian to introduce Zen in English. He classified human knowledge into the following three types.

Class 1: Information Knowledge

It is impossible for a human to see all things around the world or to see past events. We know these events through information that was edited in words or pictures, like newspapers, maps, books or films.

Class 2: Scientific Knowledge

This is knowledge with a scientific base which is obtained by observation, analysis and reasoning, like Newtonian dynamics, Darwinism, electronics or economic principles.

Class 3: Intuitional Knowledge

This is knowledge obtained by experience and that has not been scientifically proven, through which humans act or decide without logical reasoning.

The class 2 knowledge may be integrated into the class 1 knowledge, because the so-called

scientifically proved knowledge has no reasons why it will not be denied in future and is just a kind of very good description of the nature devised by humankind. Then, the human knowledge is classified into two in the paper, one is carried as information by media and the other is not.

Humankind employs knowledge accumulated from both information or experience in order to respond to external signals as in the Zen model in Figure 8. It is interesting to apply the model to the organizational behavior of humankind under the condition information is transferred among people by the modern media and experience is how.

(Law 3-1) Intuitional knowlecle is obtained only by experiences, and is not carried by media.

(46) In 'The Knowing-Doing Gap', Pfeffer and Sutton introduced an example of management innovation at British Petroleum. They took a number of actions to ensure that knowledge and experience would be captured and transferred within the company, and this resulted in success. They transferred people who had experience drilling wells or developing new oil reserves, for example, to the location where this experience was needed.

(47) In many firms, new technology or products are transferred from laboratories to a business department with experts who have engaged in the development. Or, when a business department brings a problem to the laboratories, field experts are sent in who have experience of the problem.

(48) At Toyota automobile factories, management teams include members who previously were workers. The vertical movement of labor is common in Japanese firms, and it is done to make collaboration easier between information knowledge and experiences in the firm. However, the horizontal movement of labor is smooth among firms in the US. This has made the ERP software easy to be commonly introduced to firms in the U.S.

(49) In many firms, they give rookies or newcomers OJT (On the Job Training) as well as knowledge.

(50) A professor lecturing management will not be necessarily a good manager in the real business world. Many universities adopt subjects for students to practice at firms or joining their projects.

No better way has been found to transfer experience other than relying on the people who have it. People with experience are moved locations where their experience is needed, or else they are appointed to trainers to give OJT. Even if it is an organization or an individual, we should have time for experience, not being absorbed only in knowledge acquisition through information media.

Though knowledge obtained from information will become more influential to human-kind by the media innovation, it does not change the fact that human thoughts necessitate assist of corresponding experiences in order to act. Moreover, the idea itself to share information-oriented knowledge or to accelerate information processing is motivated in many cases by the consciousness to survive competitions.

Today, many firms are aware of importance of experience and it can not be carried on media. Their knowledge management systems include a know-who base from which the names of employee are looked up from a key code of experience. And, many of these are still not so reliable as the list of experiences made mainly by employees' declaration base as the case of (29).

Daily human actions are regulated by ordinary law, or the so-called Nomos in the philosophy of law. The Nomos is written in words and does not sufficiently describe the regulated actions of humans, so lawyers spend much time in rhetorical debate. Nomos shows

that knowledge from information is insufficient to describe what humans should or should not do. Good manners, fairness, or environmental protection are be important knowledge for human doing. But many of these are out of Nomos. Concept of unwritten law Pysis implies natural reason which is never on a medium.

The rapid development of information media has made it easier for humans to acquire and process information. The economic data of all countries shows that GDP growth correlates more strongly with the development of telecommunications networks than with the amount of electric power consumed. Most of the best companies are equipped with information media. No industries will survive without information media.

In spite of the fact that information media are so helpful human to judge agile and efficiently, the start point should be reminded that human does not live on information as same as animals. Information is not an objective in itself; but a tool or a shadow of the human life to be used in eating, producing food, manufacturing, transporting, building houses, protecting nature from disasters, and enjoying hobbies. Looking at the best companies that have excellent information systems, we can see all of them are based on excellent real businesses. Although today's investments are focussed on the Internet and the still-growing IT industry, it is impossible for them to grow up beyond the real business. The real business is indeed accelerated by knowledge from information indeed, but it is also supported or motivated by consciousness that is believed today to develop only through by experiences. There are no ways to transport or extend the experiences like power or information which human kind developed in the past.

Though the issue of consciousness had been sometimes thrown into fruitless philosophical discussions, new research reports are found such as, extension phenomena of consciousness by transpersonal psychology, a micro tubule hypothesis by Dr. Roger Penrose, and arrangement of humankind genes solved in 2000. Why does a person persist or give up? When does a person take on responsibilities and risks or not? What does a person make work for a team or for himself ? Though these minds are said to be dependent on genes, it is also true that these are affected by circumstances or experiences such as repeated failures, a success after hardness, stock options, excellent leaders, and sports. Studies in these issues will be helpful for firms at employment, training, and management in order to supplement information media.

V. *Information and Media for Human Actions*

From the discussions above, the information processing model of human is expressed as follows.

$$A_1 = F_1(i\ (m),\ k_1(m),\ k_2(m),\ c), \tag{1}$$

where A is action, i is input information, $k_1(m)$, $k_2(m)$, and c are background knowledge, k_1 is information knowledge, k_2 is scientific knowledge, c is intuitional knowledge, and (m) expresses that i, k_1, and k_2 are dependent on media. When the action is decided totally by computer, as stock trading by computer, manufacturing by robots, and monitoring systems, human consciousness (c) does not concern in the process and quick action is acquired.

$$A_2 = F_2(i\ (m),\ k_1(m),\ k_2(m)), \tag{2}$$

where human knowledge k_1, k_2 are imbedded in software.

At both actions in A_1 and A_2, the media is effective for humans to acquire i, k_1, and k_2 quickly. However, looking from accuracy point of view, it should be noted that the media dependent information i or knowledge k_1 may include errors or deviations from the truth as was shown in Chapter 2. Then, even at the computer based decision A_2, wrong actions have possibility to happen. In order to make the deviations smaller, it is sometimes effective to collect huge amount of flesh information and analyze them statistically utilizing the advanced media. And, the issues of human consciousness effect are left for the 21 century's study.

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