

Growth of Sony and Structural Evolution of Organizational System

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I Introduction

As for a worldwide excellent company, nobody will at least find the name of Sony at the present period. In Sony, the town-street factory in Japan established needless to say by Masaru Ibuka and Akio Morita is a company that expanded even to Sony in the world only at less than half a century. For instance, a gross proceeds in fiscal year 1997 reach for about 5.6 trillion yen, and the world largest manufacturer in the electronics section¹⁾.

Then, what is the mainspring of the growth of Sony? Surely, it is thought that one powerful explanation is in the innovation activity as the expression of entrepreneurspirit (unternehmerisch Spiritualität) that the leader of an Australian sect and Shumpeter mean. The entrepreneur's success is assumed to obtain it by the domination of the innovation activity according to him. The activity of innovation is a effusion of the entrepreneurspirit, that is, it happens through the development of a new product, the invention of a new production method, the development of a new market, the development of a new resource, and the creation of a new organization with a individual entrepreneur subject²⁾. These innovators cause a new production of activity, will induce the market of competition before long, and bring a big profit consequentially by innovator's domination. The consideration of the organization of the enterprise is lacked though the meth-

od of this explanation is important. Because a an entrepreneur is certainly formed the top management in the organizational hierarchy and the serious responsibility is assumed, the business organization is a cooperative system and bring not any domination of innovation of activity if it is not an energies of teamwork with fluctuation of the cooperative system and the evolution of timely structure. When the semiautonomy (fluctuation) at all levels of multilayer system of hierarchy is secured in principle and maintained through the structural evolution by the action of a synergetic selfcatalysis, the cooperative system with energies truly achieved. This is, that is, an explanation based on the dynamics of selforganization through the activity with fluctuation and the action of selfcatalysis.

First of all, the research of this paper clarifies the dynamics of process as the activity with fluctuation from the viewpoint of the organizational system in growth of Sony, the more importance is perform in the verification of dynamics of selforganization by the selfcatalysis and the synergetic selfcatalysis, that is, the structural evolution.

II Fluctuation of Organizational System and Dynamics of Process

The dynamics of selforganization through the fluctuation, the selfcatalysis and the synergetic selfcatalysis relates to the dynamics of process and the structural dynamics of the organizai-

1) Center of Sony's Publicity, *Autobiography of Sony*, Wc Publishing Dep. 2000, p.1.

2) Schumpeter, J.T., *Theorie der wirtschaftlichen Entwicklung*, Dunker und Humbolt, 1935, 4aufl., S.74~75.

tional system, here are clarified empirically the growth of process of Sony from the viewpoint of process dynamics of the organizational system.

1 Feature of fluctuation and Dynamics of Process

Whether Masaru Ibuka had a clear recognition about the organization system, it is not certain. However, it is certain that he had constant sense of values about the cooperative system. That is, this is, clear from the establishment prospectus on a corporation of the Tokyo Correspondence Industry (antecedent of Sony³⁾ and abbreviate Tokyo Correspondence Industry) by Ibuka's own handwriting. First of all, he was described the background to the establishment of the Tokyo Correspondence of Industry at the beginning of the establishment prospectus as follows. A people who gathered was conscious the social mission and demonstrated a surprising zeal and the ability for a technical subject though they were a badness conditions during the war. If it is on condition that man are conscious the social mission, combine truly characteristic, are exercisable to one's heart's content the ability of technology with the spirit of a hard cooperation, it thought how the administration happy, become a very big thing as for the result, for example when the number of few are, the facilities scarce. When I drew the plan that can achieve such an ideal, it became a determination where it rather achieves the dream, because the war end⁴⁾. Exactly, it is this. The starting point of Ibuka's cooperative system is here. Moreover, it is a starting point of fluctuation and catalysis

in the personal opinion. Moreover, it hangs out "The constructs of the ideal factory that keeps the free trait and funny because of exercise the highest degree the skill of the engineer who seriously becomes it" in the beginning of the purpose of company establishment, record "abolish the unjustified gain, put the important point a full of content and the substantial activity insisiently, pursue not mischief the expansion of scale", "try the selection of product to the utmost, welcome rather the difficult of technology, strain a somewhat quantity, become the object to the high highclass of technical product in the highest use of society", and "select carefully for employee, compose with the few people, avoid the formal rank of job, put the standard of ability and personalism all order, exercise the skill of individual a ultimate limit" in company's basic principles⁵⁾. It is a Sony's spirit to have paraphrased the spirit of this establishment in the present age style. And Ibuka says that this

Sony's Spirit

In Sony, the pioneer, the window are always opened toward the unknown world, and the breath is filled.

Sony resolutely works on the work that avoids by and passes by the person because the person is difficult, and it is made corporating.

Here, a creative activity is demanded, expected, and has been promised over all of the development and the production and sales of a new product.

There is no pleasure with the working person in Sony except this.

Each questions closely in the very limit of own power, trains own, and advance own. It is suitable more well than better and finished aknitting at the sametime.

A pioneer's Sony is making the best use of the person unlimitedly, reliable in the person, developing the ability always, and advancing, this is only the life of Sony.

3) Sony became today's Sony from Tokyou Correspondence Industry Co.(1946) by the company name chang in 1958.
4) Masaru Ibuka, *Trip to Creation*, The Kousei Press , 1985, p.171.
5) Masaru Ibuka, *The Above-Mentioned Book*, p.171. Takao Kanaoka, *Human Management of Sony*, CBS.Sony Press, 1982, pp.26-27.

Sony's spirit will have been succeeded even to today's Sony⁶⁾. Then, what feature are you in the Sony spirit? Next, I will clarify this respect.

① Person's Importance and Team Work

The publications that describe the success story of company exist up a large number to now, and only the thing (for instance, Matsushita Electric Industry, Hitachi, Toyota, IBM, Boeing, Hewlett-Packard, and Eastman Kodak,⁷⁾ etc.) to emphasize the person's importance even if the either is seen. This is very important in the case with Sony especially. That is, Masaru Ibuka says. The employee has the brain and the technology compared with the big business organization even if there are neither money nor a machine plant. What you can do anything if is used⁸⁾.

② Positive Activity and Freedom of Activity

The stiff business of organization, in a word, in formalization that compels a severe division of duty, can hardly be expected a positive activity. It is seen by a flexible, dynamic business of organization. That is, a positive activity is an activity to be captured not the duty of division, to make good use of own technology and creative knowledge, and to always face a new challenge, and it exists in the activity of motto "Make others or the thing that not is" that Masaru Ibuka says.⁹⁾ However, it is necessary to secure the freedom

of the activity greatly for this activity. As for this respect, Sony is special again.

③ Generosity to Failure and Relation of Support

It is orientative to the success and should be generous to the failure to ensure the freedom of the activity that overflows positively in originality. The generosity to the failure is a feature (for instance, Toray, Canon, 3M, Johnson & Johnson, and Emerson Electric, etc.) to a succeeding business of organization that stands out especially. A positive, innovative activity doesn't arise naturally. The backup at all business organizational level, in a word, the supporting relation is indispensable. Only a business organization with supporting relation is a business organization that can use a innovative activity to its maximum. First of all, Ibuka was generous to the failure.

④ Fast Decision Making and Ability Standard Activity

The big freedom is secured for the ability. Even if a positive activity is seen by people, but it is attacked by a powerless feeling for the slowness of the feedback of the decision making when they come to require the decision making long time, and people lose the motivation. However, even this respect was peculiar to Sony. "It is Sony that the freedom is valued by there is no tradition above the tradition and the tradition."

6) Takao Kanaoka, *The Above-Mentioned Book*, p.27.

7) Kounosuke Matsushita, *Management in Use of Person*, PHPInstitute, 1989. Minoru Suzuki, *Personnel Management of Matsushita Electricity*, Mitsuji Bookstore, 1967. Masakazu Iwai, *Administrative Innovation of Hitachi Style · Study of MI Movement*, Diamond Co., 1985. Yasuo Okamoto, *Hitachi and Matsushita*, Tyuokoron Co. 1979. Taichi Ono, *Production System of Toyota*, Diamond Co., 2000. Kenji Kojima, *Revolution of Superlean*, Nipon Keizai Shinbun Co., 1994. Thomas, J.W, *A Business and its Beliefs : The Ideas that Helped Build IBM*, McGraw Hill, 1963. Hewlett, W.R, and D. Packard, *The HP Way*, Hewlett-Packard, 1980.

Smith, L., "J & J comes a long Way from Baby", *Fortune*, 1, 1981. p.66. Steiner, G.A. (ed.), *The Creative Organization*, University of Chicago Press, 1965. Peters, T. J and R. H. Waterman, *In Search of Excellence: Lessons from American's, Best-Run Companies*, Harper Collins Business 1982. Nation's Business, (ed.), *Lessons of Leadership*, Doubledy & Company, 1969, 8 chap.

8) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, Corporation of Sony, 1986, p.25.

9) Center of Sony's Publicity, *Autobiography of Sony*, p.47.

⑤ Foresight and Social Sense of Mission

The great divergence is still brought to the growth of a business organization though a leader's foresights are parts of a personal ability, whether it is possible to lead correctly by the leader's having an excellent foresight, and turning the activity of a business organization in the future. Also in Sony, one genius leader existed. In documentary of "Sony's Autobiography", Masaru Ibuka's foresight contributed exactly greatly if it saw to the accomplishment of rapid growth of Sony¹⁰.

2 Fluctuation and Dynamics of Process

A Tape-recorder

The beginning of dynamic growth and the evolution of Sony is on in fluctuation concerning the tape-recorder (activity = free or free behavior) and the process dynamics. The work of the broadcasting station and the government office not only became the seed of a wonderful rice but also became the foothold of a big leap for the Tokyo Correspondence Industry. In a word, it is that the development technology of the unequal platform of the Tokyo Correspondence of Industry that was able to work on the recorder without difficulty by winning to the place was able to be done back and to have done the groundwork (fluctuation of the development power). Masaru Ibuka and Akio Morita want to have tried the commodity connected directly with the general public more besides the product made from the specifications previously given by the broadcasting station and the government office¹¹. Then, it is a wire recorder that two marked down. Imme-

diately, the research was started. The main body of the wire recorder was disjointedly resolved, and the principle etc. of the record playback were examined. As a result, it is had understood there are a lot of problems so that the development is not only an impossible consultation in Japan of postwar days where it goes to ruin and are insufficient goods at all making the wire that a lot of nickels enter, but also is the difficulty of repair when cut the wire recorder, violent the wear-out of head, cannot be recorded for a long time, and bads the recording characteristic for noise etc. Ibuka switched immediately to the tape-recorder. However, there were two difficult problems did not solve it when the tape-recorder was started. That is, it be for one to have to make the tape, and another to have to obtain the patent of the exchange bias (in a word, the magnetic recording method of which the bias is the exchange). First of all, what is made the base of the tape?

What kind of thing is suitable for a magnetic material is not entirely understood though it was understood that a magnetic material was effective from information on the AEG Co. It fails though the OP magnet was floured and used. When the second oxalic iron is burnt, it can be a weak magnet (the second oxidation iron). It succeeded because of the proposal of Nobutoshi Kihara that floured this. Well, how is the powder painted on paper? It failed with a spray gun, succeeded the Idea of Ibuka that the brush of racoon's hair on the chest is good. What is made the base of the paper tape? It becomes the wakame seaweed tape of funyafunya if moisture

10) Center of Sony's Publicity, *The Above-Mentioned Book*, p.141.

11) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, p.49.

wears it, and fails though it was understood that a cellophane was good in the experiment on cellophane. Keisaburo Tozawa succeeds in the paper tape making by Morita's cooperation request to Honshu Paper Co¹²⁾. Next, this inherited from Adachi Electric and was solved by halving NEC Co. by Ibuka's ability though was a problem of the acquisition of right of the patent of the exchange bias method. Soon, the first machine of trial product of the tape-recorder completed in September 1949, the G type for a business in January 1950, the A type for the spread in February of the same year, and advanced walking aiming at the birth and the sale of the first domestic production with steady steps. This is sure to sell to Masaru Ibuka and Akio Morita as flying because it is the first, epoch-making commodity in Japan when the tape-recorder is completed. When the killing are able to be done by this, our company also simply did great joy. It was a terrible slump when is starting as for the sales. No one tries to buy it, saying that "It is interesting and convenient" though everyone thoroughly praises. With a money at that time is done 160,000 yen and there are 45K in the weight of G type, if it thinks. With this, a general people cannot put out its hand (fluctuation of the activity for sale). The popular commercialization became indispensable in the activity for sale. Masao Kurahashi of Yakumo Industry bought the tape-recorder of 50 every 120,000 yen of G type. Of course, I will sell it for 168,000 yen each. However, it did not sell still by even one though Kurahashi made the foot like the stick and run around. It did not have even the selling sign at

all excluding one though half a year passed. It began to borrow to sell Kihara's et al. engineer and was studied the necessity etc. of the applying container of impedance Laura who reduced fluctuation of the difference of the frequency in the Kanto region and the Kansai region and the sound (fluctuation of the development activity). Kurahashi had a large amount of delivery of goods to Geidai, the National Diet Library, and the Justice prefecture and sold 50 tape-recorders all before long. Kurahashi will assume office as the managing director of sales department head of the sales subsidiary that the Tokyo Correspondence Industry newly established, and undertake a sales of the tape-recorder in full scale soon. The tape-recorder increases of course by the completion of H type for the spread and by the aftercare the demand from the school, the demand has increased to the tape-recorder rapidly by completing the continuing P type. It is that the production of activity doesn't catch up that it embarrasses because the tape-recorder comes to sell. The Tokyo Correspondence Industry has not experienced a mass production up to now at all. Not only the visit of the mass production of method but also the guidance of

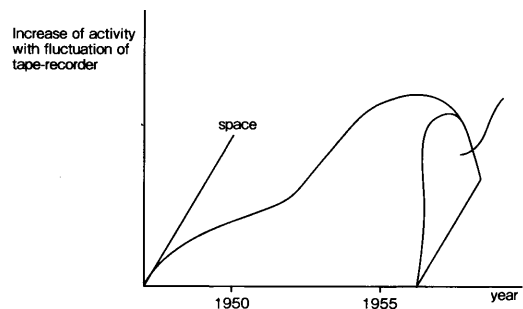


Figure 1 Increase of activity with fluctuation of tape-recorder

12) Sony editing, *The Above-Mentioned Book*, pp.52-58.

the plant manager of the Hayakawa electric machine was able to be received conveniently by the goodwill¹³⁾ (fluctuation of the production activity). Thus, the system of mass production was established, and a rapid growth of the Tokyo communication industry was achieved. Figure 1 is the thing that the strategic decision, the development of activity, the activity for sale, and the communications, etc. to the tape-recorder were shown as an increase of the activity with fluctuation.

B Transistor · radio

Masaru Ibuka was racking his brains. What is new work that can be active by it is possible to go in the accumulated development of power and interesting in a lot of technican (fluctuation of the strategic decision)? The story of the transistor · radio has come unexpectedly from the Western Electric Co. Good "The following did the radio" this were answers that he had gotten. This decision obtained a lot of people's agreements including Akio Morita, and became an in-company consensus at once. Morita visited America in August, 1953, and concluded the technical help contract concerning the Western Electric Co. and the transistor · radio manufacturing, and the elites of Tetsuo Tsukamoto, Saburo Iwata, Motomi Akabe, Akio Amaya, and Junichi Yasuda et.al were collected under Kazuo Iwama of the head, and was organized to the transistor · radio development of department corps. Iwama collected information on the transistor manufacturing devices when it was possible to do by proceeding at once to the western Electric Co. and making good use of doubtful eng-

lish concerning the transistor, for instance such as the germanium reduction device with hydrogen, the zone refinement devices to raise a purity, and the cutting machines, settled in the report in detail, and sent it to the staff in the company. The transistor · radio development department corps of the Tokyo Correspondence of Industry succeeded in oscillating the transistor of the same type as Shockley of Bell Laboratory for the first time based on the information. In addition, it was completed the Junction transistor done back and forth that Iwama came back from the United States. The basic research was completed by this, and the development of the transistor · radio became a target finally. However, it was a wonderful decision. When determined that Masaru Ibuka and Akio Morita did "Transistor", the Tokyo Correspondence of Industry was a company where the capital did not come up to 100 million in six years alone though was known the name in the tape-recorder. The Tokyo Correspondence Industry started the money and the effort putting never think even as for the company scale the transistor · radio that did not understand whether to become a thing. As for the chairman of the board of director, it was appearance of eagerness in the management taken all possible measures, that install as the chairman of board of director to the counselor's Junshirou Mandai (chairman of the former Empire Bank) and the auditor to Michiharu Tajima (participation before in the Nippon Bank)¹⁴⁾. Anyway, it cost money. Even only the capital investment of development is an enormous investment. Toshiro Sakoda and Shozaburo

13) Sony editing, *The Above-Mentioned Book*, p.87.

14) Sony editing, *The Above-Mentioned Book*, p.127.

Ôtachigawa of accounting in such succeeded in the financing from The Mitsui Bank, Ltd. At once, when it becomes a radio, the transistor becomes difficult. Especially, it is necessary to aim at the transistor of which the high frequency goes out, in a word, the thing of a grown (growth) type. For that, it is necessary to manufacture each device be semiautomatic up to now, to operate it more accurately the pull-up wrapping to rely on person's intuition. As for an essential part, in a word, the doping mechanism, it was its own way though the crystal pull-up machine was made referring to the document of the transistor technology. About the wrapping machine, the catalog of the lap mastering was seen, and the thing that a lens grinder on the market was remodeled (pseuwrap mastering) was used¹⁵⁾. Thus, Iwama et al. went forward aiming at the completion of the transistor · radio. The Tokyo Correspondencecore Industry came for making the transistor · radio for trial purposes to begin first after with both the point contacting and Junction transistors in June, 1954. However, the Rejensha Co. in the United States announced the sale of a real transistor · radio TR-1 type of the output 10milli watt by using the transistor 4 seki in December of the same year¹⁶⁾. Masaru Ibuka's chest was crossed regretably. However, it thought about the development speed more than before by becoming of this one turning point, and it worked on the development of the transistor · radio. The result appeared January in next year, and the superradio TR-52 type with a transistor of all junctions was completed. Akio Morita who toward the

United States and Canada for the marketing research and the business talk will bring the transistor · radio as a sample in March, 1955. Morita decided the mark of "Sony" to be put in all its own products before making a passage. Transistor · radio TR-52 type came a reference from a major Blow Bar clock company in the United States. However, not the trademark of Sony but the trademark of the Blow Bar company was conditional putting. Morita refused the 100,000 orders business talks by thinking about the Sony brand of the world of the future. However, a plastic of white lattice in front of the cabinet is transformed later though this transistor · radio TR-52 type call the United Nations building, and had turned out to discolor. Therefore, the sale discontinued, and became the thing of the phantom. August in same year complete the new transistor · radio TR-55type with the good lesson of cabinet event, not only the transformation and a color, the improvement of real material, the improvement of difference of transistor characteristic, the yield improvement measure etc, and became a sale. The Tokyo Correspondencecore Industry of commercial branch (antecedent of the Sony commercial branch) will be established in Tokyo and Osaka taking the opportunity of the sale of this transistor · radio TR-55 type, and the spread of the transistor · radio product and the sales be handled. However, the thing doesn't sell easily even if the sales branch can do. Then, it will put it out to the premium of the home run prize of the Japan Series by proposing Taketoshi Kodama of the sales branch chief in Osaka. However, a severe order,

15) Sony editing, *The Above-Mentioned Book*, pp.131~132.

16) Sony editing, *The Above-Mentioned Book*, p.139.

that is, to improve more a sensitivity from the sales person (when it is a little too far from the broadcasting station, the sound can hardly be caught), and high too the price (price 18,900 yen to the starting salary about 8000 yen of the university graduate) etc. has come out. Moreover, the Tokyo Correspondencecore Industry took the epoch-making sales of strategy at this time. That is, the technology was granted to the major electric machine manufacturer of Matsushita, Sanyo, Hayakawa, Toshiba, Victor, and Standard to acknowledge the transistor · radio in Japan in a short term, and the sales of cooperation was requested¹⁷⁾. People are needed more than before if it makes a strenuous effort in the production of the transistor · radios (fluctuation of a personnel activity). Ôtachigawa et.al went out from Sendai to Tohoku and Hokkaido far for the transistor daughter. In transistor daughter's pet name, the employee in my company was not originally the idea that Ibuka et al.discriminate the white-collar and the blue-collar to worker, and originated in consideration that it is the same companion what work¹⁸⁾. Consequentially, the adoption of the Tokyo Correspondencecore Industry gradually is popular or has risen because this obtains popular. 1956 year when the production of the transistor · radios had begun finally to get on the right track was year that fell on on the tenth establishment anniversary of the Tokyo Correspondence of Industry. The various models have come out from the transistor · radio when becoming this. For instance, the TR-72 type became famous by the fact that the cabi-

net and the tuning that used the cherry blossoms tree were easy. Moreover, the TR-81 type received the reservation of the radio for the school in the remote place from NHK, and received the order from 200 places in the whole country. And a minimum epoch-making commodity and a pockettable radio TR-63 types in the world appear. In saying that the pockettable radio TR-63 types is good the sensitivity for small and 6 seki, the power consumption besides below the half, that was not only becoming in our country famous from putting on the market at the beginning, but also not forgetting this model as for it was the duty of the first real export machine of the transistor radio. Export became a big success as exported to the United States in large quantities not in time of export at last few days of the year and in chartering the JAL to having made the Agrot Co. and the long-term handling contract by Morita's visiting to America. The production of the transistor · radio comes to surpass the production of the vacuum tube type carrying radio in 1957 and the transistor production of the Tokyo Correspondence of Industry has grown up to best 5 of the transis-

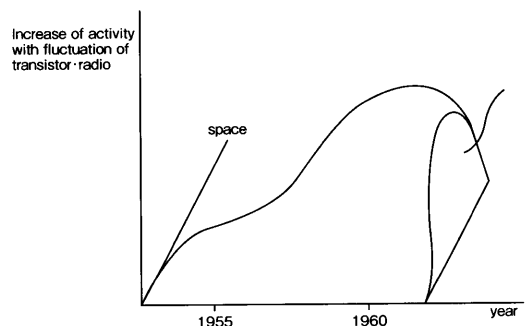


Figure 2 Increase of activity with fluctuation of transistor·radio

17) Sony editing, *The Above-Mentioned Book*, pp.152~153.

18) Sony editing, *The Above-Mentioned Book*, pp.154~155.

19) Sony editing, *The Above-Mentioned Book*, p.171.

tor manufacturer in the world rapidly¹⁹). Figure 2 is the thing that a decision making concerning the transistor · radio (especially, strategy), a development activity, a production, a personnel of activity, the activity for sale and a communications, etc. were shown as an increase of the rapidly with fluctuation.

C Trinitron · television

There is something that it be amazed because of the zeals of engineers of Sony when a new thing is run after (fluctuation of the human resources). Masaru Ibuka talked about the ambition, saying that "My dream at the New Year was appearance of the transistor television" in compliance with the expectation "Naturally, the following are the televisions because it was able to have done the transistor radio" at the people at beginning of a year of 1959²⁰). However, the fulfillment of one's dreams was not so easy. In the radio and the television, to begin with, foundation was different. The number one of problem is a stone. There is no semiconductor product such as transistors and diodes for the one of a high voltage and a large current, though it is suitable for the circuit of a low voltage and a small current. The television needs about 100 times in the frequency and about 20 extra times in the current, at the same time, the voltage is needs the transistor with 10 in time resisting pressure, whether it is a radio and a television the difference, like any there is. The stone of the television is more high level that much²¹). The development of the silicon transistor for a television stumbled at the time of beginning. First of

all, it is difficult to make a good crystal. It is very difficult to make the crystal with few defects silicon from high purity because melting points are higher than germaniums and the chemistry revitalizations extremely at the high temperature. Of course, the difficulty of the material development of the crucible used (To make the quartz of the material of the crucible corroded, silicon), the temperature controls and the monocrystalline improving device is not ratios of the germanium. It goes out somewhere on the screen when there is a fault even a little because the television is the thing like the measuring instrument, and the indicator of brown sedge has gone out to the surface. The manufacturing and the assembly technology of the crystal, the development of the circuit and the brown sedge, therefore repeated back and forth like the seesaw game (fluctuation of the development activity). At last, TV8-301 was completed repeatedly making for trial purposes and making for trial purposes. The transistor 23 seki are used unifying silicon and the germanium and the diodes 15, and the high-pressure diodes 2 are used for TV8-301. For the transistor having been newly developed by Kazuo Iwama and Tetsuo Tsukamoto et.al in this were used 9 kinds such as for the horizontal inclination the silicon 2SC41, for RF the germanium of mesa type transistor 2SA16, and for the image of output the shiricon-gon 2SC19²²). As a result, it did not sell in the reputation at the people, though the television technology and the transistor technology of Sony's making to the transistor were going to be

20) Sony editing, *The Above-Mentioned Book*, p.207.

21) Sony editing, *The Above-Mentioned Book*, p.207.

22) Sony editing, *The Above-Mentioned Book*, p.210.

recognized to the world widely. To tell the truth, this television often broke down. There was such a true story. When about two years had passed since it put it on the market, Δ sign that showed the minus in the number of sales of TV8-301 was attached. The beginner director was doubted, and it heard it from general Manager's Mitsuzo Narita²³⁾. Then, when it was a sign with more returned goods. It was said the weak child who was born in these kind of things after the hard delivery. TV8-301 is in fact the black and white. It was thought that the technology formation of Sony was the thing that an imperfect reaching an extreme is in the television of the color none. However, a lot of brown sedges of three electron gun color reception sedge of the shadow mask method that RCA developed are used as for the technology of the color television. This brown sedge had the fault comparatively high the price, the darkness of image without going out a true color. This straightened not and the spread of the color television was greatly late. Then, Masaru Ibuka et al. searched for the one to take the place of the shadow mask method. And, it was fortunately found in the IRE show of a new technology in New York, in a word, the exhibition show in March 1961. That is, it is a chromatron. When the best point of real parent in the chromatron proposer and Lawrence's ideas goes to the place of the bamboo blind one that one electron gun electronic beam knit a thin wire named cararstottinggrid, it is that the space of the wire and the beam here squeeze in the space of the wire and exists in the irradiation toward the fluorescent materi-

al of the prescribed red, green, and blue in streeting. The shadow in the grid is projected onto a fluorescent side when the beam goes straight it lies to the grid if it thinks in the usual optics, and it seems that the screen darkens that much. However, when the electron beam passes the space of the wire, it can use 80 % or more the beam and will obtain a bright screen by this. This was the excellent certain one, and was not wrong fundamentally academically. However, it was not an article to which the hand was able to be put out very much in the cost by brought up to a practical equipment of various problems from when the development was started and seen²⁴⁾. The chromatron shows the completion of one respondent in September 1964, is open to the public of 19 type chromatron color television of the single electron gun type high loyalty tenjun method, though the problem remained a lot. It won the place in which it was remarkable from each district as Sony of the fifth product that followed from tape-recorder, transistor · radio, transistor · television, and VTR. However, it was not possible to launch out into from a lot of running up the manufacturing cost, and the breakdown to mass production (fluctuation of the production activity). Then, what is the cause barrel problem of the breakdown that afflicts the person in charge of the chromatron development? One is a difficulty of the insulation work to prevent the trouble by a high voltage. That is, about 270 or 300 thin is needed in thin as roughness is not felt by man's eyes and the resolution in the number of lines (stripe) where the fluorescent material made on on a fluores-

23) Sony editing, *The Above-Mentioned Book*, p.213.

24) Sony editing, *The Above-Mentioned Book*, p.288.

cent side is thin. However, also for the interval of the wire in the amount color switching grid to be able to do nothing but narrow very much when thinning it that much, and to do the electron beam that went out of the electron gun there in focus, a considerable, high voltage will be applied. the insulation should be able to be needed at the same time because the voltage is applied and to endure the voltage. This is a serious work including the material. The printing of the fluorescent material of another is very difficult in the chromatron compared with the shadow mask. That is, it does by the method named electron beam printang printed out in the shape really assembled with the brown sedge in the chromatron while done by the method named optacal printang that uses, prints out the straight advancement of light by a way optical the shadow mask, develops it, and applies the stripe of the fluorescent material. As a result, the printing not only becomes difficult but also it very takes time. The more it makes the chromatron, the more the loss has grown. Thus, Sony came to have to enter the state driven in the chromatron, to search for the method to take the place of the chromatron seriously. One chromatron developer, Susumu Yoshida managed to break down the current state, and there was the retrieved hand or it was in a hurry haste. In such, he proposed that experimented whether it was possible to make three electron beams run in a single electron gun. The way to catch the development site was cold. However, it was not thought in common sense, and an unexpected good result came out when having experiment-

ed. The prototype of a new electron gun was completed by 1966 last few days of the year. Working goodness of the shadow mask for three electron beam single electron gun of this in-line array was taken, and Sony was sought the method with a better image quality characteristic. Okoshi opened breakthrough. It arranges a lot of thin length holes by the aperture grille method the photograph chemically, and has the structure to stretch the pin on the frame, and improves the permeability of the electron beam. A new color television that built a new electron gun into the aperture grille method was completed, and it was named a trinitron in October 1967²⁵⁾. Figure 3 is the one that strategic decision making, development of activity, production of activity, sales of activity, and communications etc. relating the trinitron color · television were shown as an increase of the activity with fluctuation. The trinitron color · television shows very good sales after the first machine KV-1310 is put on the market domestically in October 1968, increases also demand in foreign countries, is constructed the plant of assembly of the color television and the plant of production of brown sedge (CRT) one after another, and has devel-

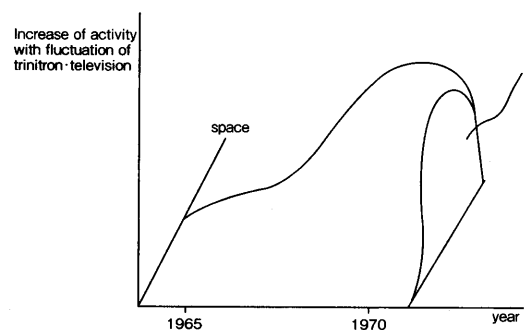


Figure 3 Increase of activity with fluctuation of trinitron · television

25) Sony editing, *The Above-Mentioned Book*, p.315.

oped into making of production in Europe and America local before long rapidly. The trinitron color · television of Sony will be chosen to be an Emmy prize assumed to be the highest honor of the television field, and Sony occupy the world number one of share in a home color television market as for recent. Furthermore, this trinitron is inventing a new business that becomes the chance of the following leap because of the spread of the computer (effect of fluctuation).

III Fluctuation of Organizational System and Evolution of Structure

Up to now, the feature of process dynamics of the organization system of Sony, the fluctuation and the three case of the process dynamics of Sony (especially, tape-recorder, transistor · radio, and trinitron · television) has been explained. Let's continuously verify the growth process of Sony from the viewpoint of self-organization, in a word, the structural evolution. The structural dynamics of selforganization, in a word, the structural evolution is summarized as explained on countless occasions.

That is, the evolution of the system evolves by accepting elastically the inheritable variation like the state that equilibrium is barely kept a system that manages the collective action of selfcatalysis toward the edge of chaos between order and chaos. If this is interpreted the business organization, in the whole of the activity with fluctuation seen in a total production activity of the single group of product at the time S_t , when the whole of the activity with fluctuation seen in a total production activity of a new

product of this group or the new group product, or the overseas export of activity reaches about 45 percent, while barely maintaining a order in complexly of a business organization, facing chaos, the synergetic action of selfcatalysis begins to lead the structure of the organization system to evolution. Moreover, In the whole of the activity with fluctuation seen in a total production activity of the diversified product of group or the diversified region of group at the time S_t , when the the whole of the activity with fluctuation seen in a total production activity of a new diversified product of this group or a new diversified region of this group or the overseas export activity reaches about 45 percent, a business organization comes to accomplish a structural evolution while receiving the synergetic action of selfcatalysis, while barely maintaining the order in diversity and complexly, facing the chaos. The structure of the organization system is understood as the compound structural system consists of the structural hierarchical system of government, the structural hierarchical system of purpose, the structural hierarchical system of information and communications, and the structural hierarchical system of decision making and execution, already described. Of course, the evolution is seen in the process of the organization system, but here give weight to the verification of the evolution of the structure. Therefore, the verification of evolution will relate to those four structural characteristics.

1 Fluctuation and Structural Evolution Related to Tape-recorders

The structural evolution of the organization

system of Sony is a phenomenon of selforganization that is intertwined and happens to the process dynamics of activity with fluctuation and the selfcatalysis. Once, Chandler presented a proposition "The structure of the organization follows strategy"²⁷⁾. As for the relation between the decision making of the development strategy of the tape-recorder and the organizational structure in the antecedent Tokyo Correspondence Industry of of Sony is appropriate though this proposition is corrected in many cases. However, he was not able to clarify the dynamics by which the strategy led the transformation of organizational structure. I will try to solve the activity with fluctuation that coils round the tape-recorder there, the selfcatalysis, and the relation of structural evolution. First of all, the structure of the organization system of the Tokyo Correspondence Industry in point that did a decision making of development strategy of tape-recorder is shown in figure 4. Figure 4 was the structure of the organization system when build after the antecedent "Tokyo Correspondence Industry of

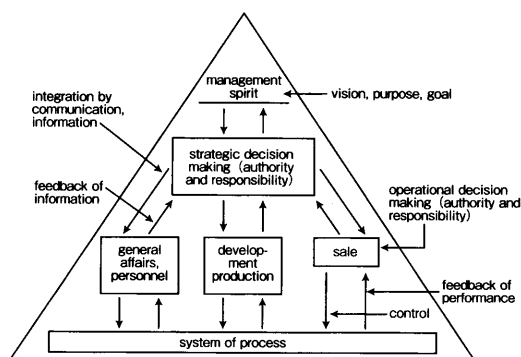


Figure 4 Organizational Structure in 1950 of Tokyo Correspondence Industry

26) Sony editing, *The Above-Mentioned Book*, p.221.

27) Chandler, A.D, *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*, M.I.T. Press, 1962, pp.7~17.

28) Sony's Publicity, *Autobiography of Sony*, Wc Co., 2008, p.14.

establishment" of Sony in 1948 year. It was undeveloped and immature as well as a lot of other company establishment periods. However, the dream factory having been led by Masaru Ibuka of a charismatic genius engineer and Akio Morita of a sharp management of sensibility advanced a high spontaneity and activeness, and had the united motive putting structure to draw out an individual ability to its maximum in all 30 companion's employee (most is an engineer). Engineer Masaru Ibuka takes the patent by an epoch-making invention of "running neon" in the school days (attend school the first advanced school to Waseda University), and exhibits this in the Paris exposition. Therefore, an excellent prize was won and the genius inventor's glimpse was shown from early time as it is winning²⁸⁾. Moreover, it originates the dream factory by having been imaged from the one that is called "Sony spirit", hang out as an idea of establishment, if it says in the present age style. A lot of employees resonated to the Sony spirit (or, organizational culture). This brings the united motive putting structure and the united motive putting structure is supplemented the validity of government as a subjective base, and has been strengthened by the charisma and the standard of the trade practice "the profit of the company leads to a satisfactory desire of the employee", though the insufficiency of the discontinuous individual employment of contract was. The strong structure of government seen tacit had been approved there. The decision making was

divided into the strategic decision making and the operating decision making based on the principle of the differentiation and integration. The strategic decision making is a role of top management, that is, president Tamon Maeda, executive director Masaru Ibuka, director Akio Morita, director Shozaburo Ôtatigawa, and director Akira Higuchi in roles constitution of structure of organization. However, it was not a corporate person though president Tamon Maeda had fat networks in politics and financial circles. President Tamon Maeda is resigned in November 1950, Masaru Ibuka assumes office as president, and Akio Morita assumed office as executive director²⁹⁾. Masaru Ibuka wanted to try the commodity connected directly with the general public more besides the product made from specifications previously given by the government office and the broadcasting station etc. and Akio Morita also thought whether there was commodity that was extensible of the market excluding NHK from done viewpoint either. At the arrowhead, two were marked down the wire recorder and progressed to the development of the tape-recorder before long. That is, the development strategies of the tape-recorder were a joint decisions of Masaru Ibuka and Akio's Morita. However, a basic plan did not exist between them. The personal opinion, the Tokyo Correspondence Industry at that time was a situation that had to succeed in development of the tape-recorder even one second of one minute earlier, under the state having to say the precarious bicycle operation at the time. Here, the precarious

bicycle operation is coinage to the bicycle driving that falls in case of the stop of the foot that rows the pedal that gets, concerning a situation that falls into an inevitable matter to go bankrupt when a productive activity is stopped by one even o'clock. Therefore, a basic plan is that it can be nodded by not being either. However, it comes to obtain vision that cause the result of the effort and foresees the future when ardently dig the business penetration by man, and expand oneself imagination, according to the top executive collection of personal phrases³⁰⁾. However, the prospect cannot make the base of the plan and the plan. Also, this is appropriate in them. The section of the operating decision making was a undifferentiation generally. The development and the manufacture were undifferential, and Masaru Ibuka commanded Akira Higuchi, Kazuo Iwama, Nobutoshi Kihara, Keiichirou Tozawa, Sadamu Kurogami, Junichi Yasuda, Kaname Nakatsu, and Noburu Yamauchi etc. aggressively. The sale took charge of Kouichi Sasahara and Yoshiki Syoutou, a general, accounting and personnel took charge by Shozaburo Ôtatigawa and Junichi Hasegawa in undifferentiation³¹⁾. By the way, Akio Morita was in the standpoint of general manager. Moreover, the operating planning was not made as well as a basic plan. The Tokyo Correspondence Industry was subcontracted order chiefly factory (especially, order from Teisin Ministry, NHK, and GHQ). Therefore, the decision making of the development strategy of the tape-recorder was made based on vision that would foresee the market in

29) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, p.323.

30) Nation's Business, (ed.), *Lessons of Leadership*, 8 chap.

31) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, pp.25~60.

Masaru Ibuka and Akio Morita futures, the accumulation of the experience and kowhow concerning the development of an original product, production, and sales was quite none at all. For instance, it is not analyzed whether it is a product that suits the consumer or the customer needs in the price, weight, the size, and the usage etc. of the tape-recorder. The idea about which it thought by relating from the purpose to a purpose rationality of a purpose—means had not budded yet. It seems that the idea by relating it to the satisfaction of a semi-purpose—means is appropriate. Moreover, though information concentrated on a top manager, the formal and informal communication in communications have large width effective (vertical or horizontal informal communications). The problem is how is the structure of the undeveloped organization system transformed and has evolved. That is, it is a dynamics of fluctuation related to the tape-recorder, selfcatalysis (especially, synergetic self-catalysis) and selforganization, in a word, the

structural evolution. To show the whole of the activity with fluctuation and to quantify a total production activity of the tape-recorder, the vertical axis in figure 5 is shown by trend of sales. Sales in 1950 are due to the order from businesses other than the tape-recorder, in a word, Teisin Ministry, NHK, and GHQ. It is 100 million yen. Total sale in 1951 did not have sales too much about the tape-recorder though increased in 150 million yen. However, it reached spread to the school in the whole country as a teaching material of the audiovisual education, and it faced the complex issue. That is, the embarrassing because the thing comes to sell is that the production doesn't catch up³²⁾. In a word, a mass production is not experienced. This problem has spread to sales and the complexity of the system of service before long though it was temporarily solved by introducing the mass production method of the Hayakawa Electric. That is, this complexity causes a selfcatalysis and it will grow up even to a synergetic selfcatalysis before long. It is total sales 350 million yen in 1952, and sales of the tape-recorder are 160 million yen, total sales in 1953 are 520 million yen and sales of the tape-recorder are 250 million yen that increases rapidly³³⁾. It is guessed that chaos in close relation to the complexity of the organization system reached in face of the limited condition at this time. Well, the increase of the activity with this kind of fluctuation can be characterized as an exponential increase. Moreover, it is about at 1953 that the whole of the activity related to the tape-recorder reaches a edge of chaos. The structure of the organization system of the Tokyo

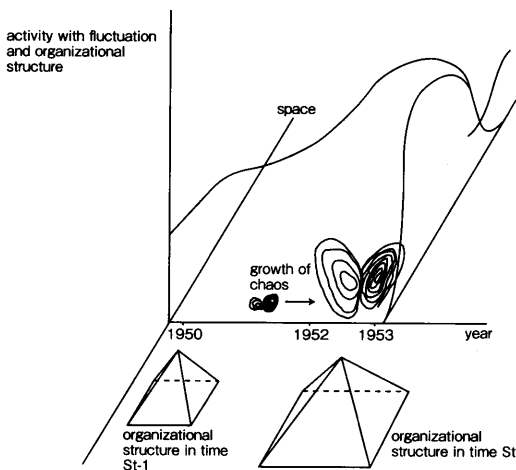


Figure 5 Fluctuation with Tape-recorder and Evolution of Organizational Structure

32) Sony's Publicity, *Autobiography of Sony*, p.73.

33) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, p.362.

Correspondence Industry greatly transforms by a synergetic selfcatalysis that grows up from selfcatalysis, while order is barely maintained working on a edge of chaos in around this 1953, and accomplishes evolution. By the way, the ratio of sales of the tape-recorder that occupied it to total sales was 48 percent at this point. Here, the structural evolution is seen by the following some points. First of all, it is rubbing in to the vision that connects the Sony spirits with the consumer market. That is, it is "Listening material in the school in the whole country" going out. As a result, the encouragement to employees, especially the salesman in the sales part became large. In personnel affairs, the road of the individual employment of contract with consistency that was an objective base of the authority by making to the section was opened. The efficiency (in a word, improvement of productivity) based on the principle of the differentiation and integration became a system that increased further. The development and manufacturing are similarly a differentiates, is made to the section, and differentiates also the accounting and personnel, and made a section³⁴⁾. By clearly making

to the section, the authority was decentralized, for instance as said to the production manager Kazuo Iwama according to the section for manufacturing, to the sales manager Kouichi Sasahara according to the section for sale, to accounts manager Shozaburou Ôtachigawa according to the section for accounting, and the business activity was enhanced especially by expansion of the sales section. Moreover, the direction about which it thought by relating the purpose to a purpose rationality of a purpose—means with the development of making to the section for the tape-recorder was opened, and the emphasis shifted from the informal communication to the formal communications as for information and communications. As a result, the transmission of information and management was promoted.

2 Fluctuation and Structural Evolution Related to Transistor · radio

Let's verify the fluctuation and the structural evolution continuously related to the transistor · radio. Akio Morita also agreed with his decision that the development strategy of the transistor radio was Masaru Ibuka's flashing. The manufacturing patent of the transistor receives the cooperation of Sido Yamada. It was authorized from WE (Western Electric Co.) comparing early. To show the whole of the activity with fluctuation and to quantify a total production activity of the transistor radio, the vertical axis in figure 7 is shown by trend of sales here in chart 7. First of all, Akio Morita decided the mark of "SONY" to be put in all products of the Tokyo Correspondence Industry before the visit to America, and, as a result, the name of the company was

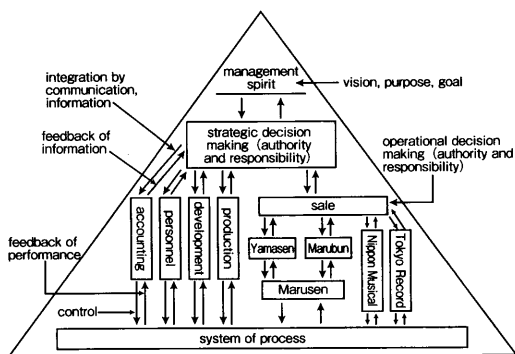


Figure 6 Evolution of Organizational Structure in about 1953 of Sony

34) Sony editing, *The Above-Mentioned Book*, p.87. Sony's Publicity, *Autobiography of Sony*, p.75.

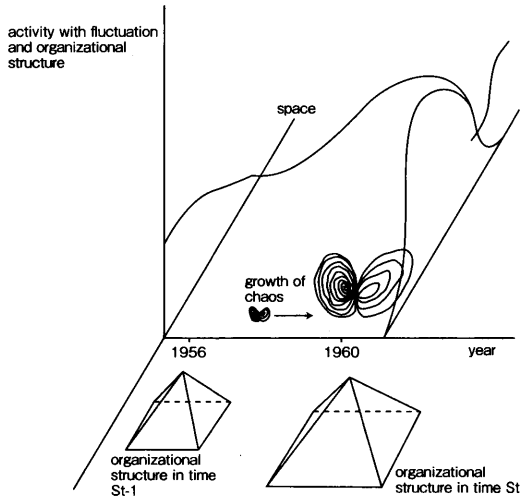


Figure 7 Flucuation with Transistor radio and Evolution of Organizational Structure

changed to Sony in March 1955. As for the transistor radio, it is year when sales began to get on the right track though total sales in 1957 are 2,700 million yen. In a word, becoming full-scale sales of transistor · radio from 1958, total sales 5,000 million yen in 1958, total sales about 8,000 million yen in 1959, total sales 14,000 million yen in 1960, and total sales in 1961 increases suddenly about 23,000 million yen³⁵⁾. In the sudden increase of the sales between these, it contributes to the increase of sales by sales of the transistor · radio in no way inferior to sales of the tape-recorder, and it has finally come to reach about 9,200 million yen during year fourth. It is guessed in this that chaos in close relation to the complexity and diversity of the organization system reached in face of the limited condition. The increase of the activity with this fluctuation can be characterized as an exponential increase, too. Moreover, the complexity and diversity according to the enormous amount of development investments in the transistor radio of large-scale

capital investment (for instance, construction of the Atsugi factory), the exploitation of foreign market, the rapid increase of employees and the establishment of Sony laboratories etc. came for fluctuation to increase suddenly and to grows a synergetic selfcatalysis rapidly. Therefore, it is about at 1961 that the activity according to fluctuation related from this to the transistor radio reached a edge of chaos, the organization system of Sony greatly transforms and evolved on this edge of chaos in around 1961 through a synergetic selfcatalysis of action, while barely maintaining order. By the way, the ratio of sales of the transistor radio to total sales was 40 per cent at this point. Then, what was the structure evolved about the organization system? I will see this respect (refer to figure 8). First of all, it is rubbing in of a new vision. That is, it was “The brand of the Sony product of the world”, and, for this, Akio Morita refused 100,000 orders for transistor radio TR-52 type. In personnel department, to adoption system of a regular new graduate was made to be established. Masaru Ibuka et al. do not originally have the idea to discriminate the employee to white-collar and the blue-

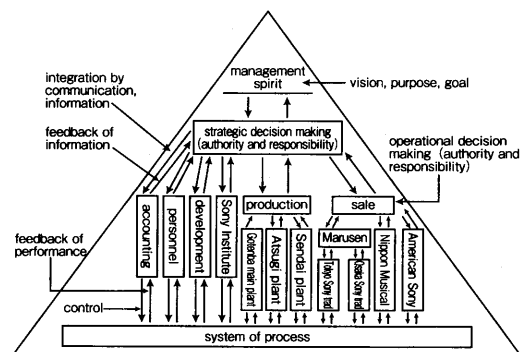


Figure 8 Evolution of Organizational Structure in about 1961 of Sony

35) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, p.364.

collar worker in its company, and had the strong consideration, in a word, the organizational culture, that called it the same companion even if the working person was doing what work³⁶⁾. This was accepted by a newly graduated employee, and it infiltrated widely and deeply. This means the shape with more comprehensible validity as a subjective base of government at the work level. The strategic decision making is a role of top manager. This system of the top manager (Board of Directors) was strengthened by adding Kazuo Iwama and Akira Higuchi to the managing director, by retaining Kouichi Sasahara, Shozaburo Ôtachigawa, and Toshiro Sakoda in director's member, and made a concentration of power. It became a system that developed greatly though it saw from an efficiency viewpoint based on the principle of the differentiation and integration. The Sony of laboratory differentiated from the development of department and Michio Hatoyama assumed office as the first director. Here are most observable in the sales and in the manufacturing department. The Atsugi factory was established as a factory only for the transistor radio, arrived at the the plant manager Toshiro Sakoda and the Sendai factory was established as a factory only for the transistor, arrived at the plant manager Kouji Takasaki (serve as the director concurrently). Thus, the Atsugi factory and the Sendai factory were specialized as the base factory of the transistor · radio and the transistor, and the headquarters of Gotenyama Co. achieved the specialization as a base factory of the tape-recorder. Moreover, in sales department, it differentiated from a Marusen into

the Tokyo Sony commercial branch (ortrade) and the Osaka Sony commercial branch, Masao Kurahashi assigned to the branch chief of the Tokyo Sony commercial branch, and Taketoshi Kodama was assigned by the branch chief of the Osaka Sony commercial branch. Especially, it is become a big leap that the United States Sony company is established for Sony that values the overseas export, and Akio Morita assumed office as the president voluntarily³⁷⁾. The form of organization of Sony in about 1961 is classified as the functionalized organization. Therefore, the feature generally seen by the organization according to the function section is shown about the information and communications. That is, it is a form that the decision making of authority and information concentrate on the top manager though it is a form that can use the merit of the function specialization by the differentiation most. However, it is not easy to say being made to a concentration of power complete by having taken the situation that serves as the director and the manager of the section concurrently though it is a peculiarity to a business organization of Japan. About the communications, the formal communications were expanded further, and, therefore, enhanced by further development of the differentiation and integration. The informal communication infiltrated widely from the work of fellow feeling in the other side. Especially a lot of development of the business activity for the tape-recorder became possible a developing based on a purpose rationality of a purpose—means, especially by relating to a purpose rationality of a purpose—means. However,

36) Sony editing, *The Above-Mentioned Book*, p.154.

37) Sony's Publicity, *Autobiography of Sony*, pp.168~215.

the area of the strategy decision making was still left about the transistor · radio, therefore, the direction that related to a purpose rationality of a purpose—means by the differentiation of the transistor · radio business though the part to which the purpose was progressed based on the satisfaction of a semi—purpose means was left, was opened.

3 fluctuation and Structural Evolution Related to Trinitron · television

In moreover, let's verify the fluctuation and the structural evolution related to the trinitron · television. When the transistor radio of the TR-63 type was put on the market, Masaru Ibuka had already thought about a long time away. And, he talked about "Appearance of the transistor television" answering the interview of the weekly magazine at a beginning of a year of 1959. That is, this became the decision declaration of the television of development strategy. The vertical axis shows the whole of the activity with fluctuation and is shown by trend of sales

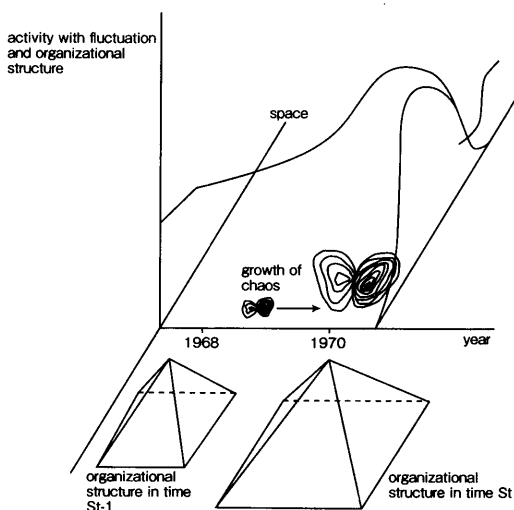


Figure 9 Fluctuation with Trinitron · television and Evolution of Organizational Structure

a total production activity of the trinitron television for quantification in figure 9. Total sales in 1965 are from estimate to 40,000 million yen in fiscal year beforehand, sales of micro television thought to be sooner or later about 10% from the estimate of the fiscal year beforehand. Total sales in 1967 are 60,000 million yen, and the trinitron · television assumed to be a problem here is still incomplete. The trinitron television completed in 1968, and was put on the market. As a result, total sales in 1968 were about 80,000 million yen, and total sales in 1969, 130,000 million yen, total sales in 1970 increased suddenly to about 170,000 million yen. Especially, sales of the trinitron · television became the main pillars in the sudden increase of the total sales between these³⁸⁾. That is, the trinitron television comes to increase suddenly in four years, and to record sales of 90,000 billion yen, for the four years. As a result, total sales in 1971 were about 190,000 billion yen, and sales of the trinitron television were almost corresponding to the total of sales of the tape-recorder and sales of the transistor · radio. At this time, it is guessed that the complexity and diversity of the organization system and chaos in close relation to those reached in face of the limited condition. Well, the increase of the activity with this fluctuation is characterized as an exponential increase, too. However, this must not forget having received the large-scale development cost for the wall of the technology so that it is likely to become the television, that is, chromatron suicidal for Sony. The other side, the overseas export activity, and development in an overseas market were

38) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, p.366.

positively developed. Akio Morita used ADR (American Depository Receipt: United States deposit bond) to procure such an enormous investment capital and put the initiative on the foreigner investment (for instance, IBM Co.). The complexity and the diversities on the success of the trinitron television, the diversification of the customer needs of the tape-recorder and the transistor radio, and the overseas export activity etc. developed the selfcatalysis action rapidly and grew the synergetic selfcatalysis of action with the sudden increase of fluctuation. It is about at 1971 that the activity with fluctuation related to the trinitron television reaches a edge of chaos, and it is greatly and deeply transfigured, and accomplishes a structural evolution at this time the organization system of Sony by the synergetic selfcatalysis of action, while barely maintaining order. By the way, the ratio of sales of the trinitron television to total sales

in about 1971 was 46 percent at this point. Then, what was the big structural evolution, will see by me. The most remarkable structural change is an evolution from the functionalized organization to the divisionalized organization (refer to figure 10). First of all, this strike became a problem of working newly and in full scale as a company that required about 400 employees for Masaru Ibuka and Akio Morita etc. flowing inside of criticism remark of general pose "That the industrial strike is the one once like taken measles, when the business organization starts growing". Masaru Ibuka says. Let's investigate the cause of the strike, and reform the point that should be reflected fast if there is a point that should be improved without fearing it. It is equal to no development of Sony in the future, when it runs away from the distress that lies in the presence³⁹⁾. This posture leads to the improvement and the enhancement of employee's work-

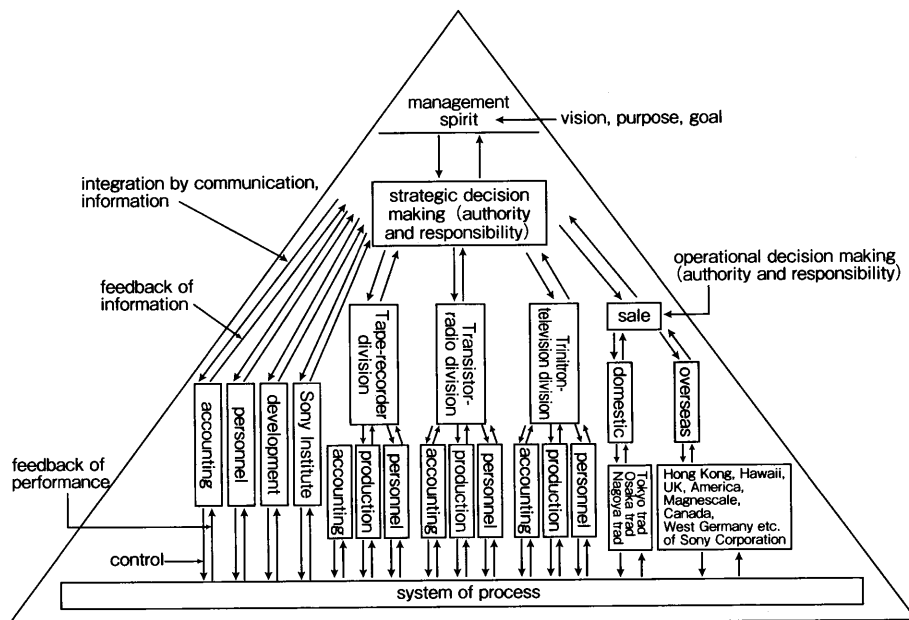


Figure 10 Evolution of Organizational Structure in about 1971 of Sony

39) Sony editing, *The Above-Mentioned Book*, pp.274-275.

ing condition, working environment, and public welfare, and it not only becomes a recovery of the validity of rule as a subjective base but also strengthening the authority as an objective base was brought by a positive solution of raising the benefit package, bonus, and raising of the wage basis. The evolution to the organization of the divisionalized system of Sony was inevitable. That is, the functionalized organization are an effective organization system, when all the decision authority are seized by the top manager, and the top manager has talented the knowledge and the ability in all respects of the decision making and the business, and when various situations that become basic of the rational decision are understood adequately and promptly, and it is treatable. However, the functionalized organization should say that it becomes inefficiency, do not function actually as the diversification strategy of Sony is to promotion from the tape-recorder to the transistor · radio and the trinitron television, and coming occupy a big weight to gross proceeds by each product, and seeing the other business organizations for this case. In a word, it is an inefficiency factor (1) the expulsion of the strategical decision making by excessively of the decision of operative action of the function section, (2) the increase of the adjustment cost between the function section and the function section, (3) a difficulty of the result measurement of the function section, (4) the complexly and the complicating of communications, and (5) the decrease of motivation of manager and employees etc. In confronts, the divisionalized organization has the following features.

(1) That is, the each division assumes a business organization of responsibility as a line department, and integrates a functions of production, sales, the technology, and management, etc. internally therefore.

(2) A business organization of responsibility of each operation division is attended a meaning that assumes the responsibility of an original profit of the operation division with the transfer of a great authority.

(3) As a rule, the transaction between each operation division are done based on the market price.

(4) Motivation of the division improves, the division manager develops the manager ability, and the manager and the employee are that both improves Motivation⁴⁰⁾.

In a word, the important thing is to be able to expect the active division of development by giving a big autonomy and bearing the responsibility (profit goal of the independent profit system) in each division. Thus, the tape-recorder division, the transistor radio division, and the trinitron television division were born in the organization system of Sony. Moreover, the Osaki factory, the Sibaura factory, the Inazawa factory (back, it is Sony Inazawa Ltd.), the Ichinomiya factory (back, it is Sony Ichinomiya Ltd.), the Haneda factory (back, it is Sony Haneda Ltd.), and Sony Shiraishi Semiconductor were newly established corresponding to the productive problem which the sales of the trinitron · television increased suddenly. Moreover, the sales section was expanded further, and became progress to the world business organization. That

40) Sloan, A.R. *MY YEARS With GENERAL MOTORS*, Doubleday & Company, 1963, 3chap.

is, it is that is Sony Corporation off Hong Kong, Sony Hawaii Corporation, Sony UK Corporation, United States Sony Record Corporation, Sony Magnescal Corporation, Sony Canada Corporation, and the establishment West Germany GmbH⁴¹⁾. A purpose of structural, hierarchical system has been greatly changed evolving to the divisionalized organization. That is, it rubbed with a whole purpose and each division purpose, and the duty and authority that was related the purpose setting of each division, to a purpose rationality of purpose—means or to the satisfaction of a semi-purpose—means, were transferred to the person in charge of each division though a purpose of the entire company setting was in the highest decision making of organization. The main activity was related to a purpose rationality of a purpose—means by this in the Tape-recorder division and the transistor · radio division. In confronted, the active area of still a lot of developments and progress was left still in the trinitron television division, therefore the purpose of division was related to the satisfaction of a semi-purpose—means. Information and communications have changed greatly, too. The Information and communications of the highest decision making of organization in the company are limited to a purpose setting of the entire company, the publication of the basic plan, and to the information and communications for the adjustment between the division and the divisions. An extra information and special information that related in a word to the tape-recorder, the transistor radio, and trinitron television came to belong to each division that corresponded sev-

erally, and to be managed. The communications to which a communications are similarly sent by the highest decision making of organization in the company decrease remarkably, and the communications concerning the business activity advance in a speed and accurate respect so that is coming be put everything out by the person in charge of each division, and have developed the formal communications. The informal communication supplemented the formal communications as Masaru Ibuka kept advising the development member who worked on the development of the trinitron television without the distinction day and night near oneself, and encouraged at the same time.

IV Conclusion

The process dynamics of the activity with fluctuation, selfcatalysis, and selforganization dynamics, in a word, the structural evolution have been being verified from the viewpoint of the organization theory of evolution about marvelous growth of Sony above. At the close of the research, I will arrange the point of the research.

First, there are a spirit of establishment and a Sony spirit expressed, in other words in the style of the cooperative system idea of Masaru Ibuka or the present age as an organizational culture that has been consistently succeeded, even if the name of the company is changed from the age of the Tokyo Correspondence Industry, and it arrives in the age of Sony. It consists of three pillars. In a word, it is order of the ability standard to form a free and broad-mindedness cooperation of system and repel a formal grading system

41) Sony editing, *Source - Anniversary on Th40th Establishment of Sony*, pp.334-344.

that can exploit a social mission and a technological ability to its maximum. In addition these highly became functional with the following feature of various elements, in my conception. That is, it is the person's valuing and team work, the positive activity and the freedom of activity, the generosity of failures and the supporting relation, a fast decision making and the ability standard, and a foresight and the sense of social mission. This feature of various elements of Sony were interactive, expanded fluctuation by the synergy effect, and brought working that made selfcatalysis active. For instance, the fluctuation is sure to increase only to the dullness in separative though a lot of fluctuation appears as shown in an individual case with the tape-recorder, the transistor · radio, and the the trinitron · television as fluctuation of a business strategy, development, human resources, information, capitals, production activities, and sales activities etc. However, in Sony, there is the idea of the cooperative system of Masaru Ibuka or a Sony spirit expressed the present age, are the interaction between the feature of various elements and a synergy effect in this after it is supported, and the fluctuation and the selfcatalysis have been activated effectively consequentially.

Secondarily, the focus of the organization system of Sony is clarified, and has been verified to the structural evolution on fluctuation, process dynamics, selfcatalysis, synergetic selfcatalysis, structural dynamics, especially the synergetic selfcatalysis and a edge of chaos. First of all, the structure of the organization system of the Tokyo Correspondence Industry that was the

antecedent of Sony in 1948 was shown in figure. And how was very transformed the structure of an undeveloped organization system of establishing initial by the decision making of the business strategy and the execution, in other words by process dynamics of the organization system, and whether it had evolved was proven. The result can have proven the evolution of hypothesis that had been presented beforehand, assuming that it was almost appropriate. When individually see, it was about at 1953 that the whole of the activity with fluctuation related to the tape-recorder reached a edge of chaos, and in a word, the structure of the organization system of the Tokyo Correspondence Industry greatly transformed by synergetic selfcatalysis that developed from selfcatalysis working, and accomplished a evolution on a edge of chaos at this time. The ratio of sales of the tape-recorder that occupied it to total sales at that time was 48 percent. It was about at 1961 that the whole of the activity with fluctuation continuously related to the transistor · radio reached a edge of chaos, and Sony greatly transformed the structure of the organization system by synergetic selfcatalysis at this time and the evolution was accomplished running on a edge of chaos. By the way, the ratio of sales of the transistor · radio to total sales was 40 percent at this time. It was about at 1971 that the whole of the activity with fluctuation related to the trinitron · television reached a chaos near edge, and in addition, the organization system of Sony was greatly and deeply transfigured, and accomplished running the evolution of structure by synergetic selfca-

talysis of action on a edge of chaos at this time.
By the way, the ratio of sales of the trinitron ·
television to total sales was 46 percent at that
time.