

Systems Design of Relationship of Nature, Space, and Human Beings

Aimed at global land planning through
interdisciplinary study

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PREFACE

This paper deals with three points as follows. The first is that as the so-called science of agriculture, which in a broad sense includes the sciences of agriculture, forestry, and fisheries is a synthetic science, it is necessary to improve its *interdisciplinary study* by eliminating the partitions between specialities. Secondly, considering such agriculture as a synthetic industry, it is necessary to improve *inter-administration propulsion* by removing the walls of longitudinal division. And finally, as the study of agriculture is a practical science, in order to apply its result, it is necessary to improve cooperation among industry, policy, and study. Consequently, with this Trinity of interdisciplinary study, inter-administration propulsion, and cooperation among industry, policy, and study, we can at last construct a fixed society adequate both materially and intellectually, that is, we can establish a new design of a nation. With regard to these points of view, I clarify how interdisciplinary study, inter-administration propulsion among industry, policy, and study should be established under system theory.

INTERDISCIPLINARY STUDY

First of all, I present my opinion on the

organization of an interdisciplinary study. For this purpose, it is necessary to clarify the need for interdisciplinary study in advance. Refer to Fig. 1. I think the ultimate objective of study is to develop knowledge which enriches human happiness.

In other words, it is not science for science's sake, but the search for such knowledge as contributes to human happiness. From this point of view, two main directions in the development of knowledge can be considered i.e., the directions of specialized study and of interdisciplinary study as shown in Fig. 1.

First, let us consider the direction of specialized study. Specialized study is a way of study which divides specialized fields into small parts, and thereafter, studying them narrowly and deeply. The division of a specialized field gradually causes the subdivision of knowledge. It is true that there is great advantage in this subdivision of knowledge, but it should be noted that there is also great disadvantage. As to the former, the more limited the field to study, the easier it is to deepen the partial knowledge, so by this way, we can breakthrough knowledge and as the result, we can gain and develop the knowledge. The marvellous development of science in the twentieth century has been attained by the very breakthrough of knowledge through the subdivision of specialized fields.

The noticeable disadvantage of subdivision of

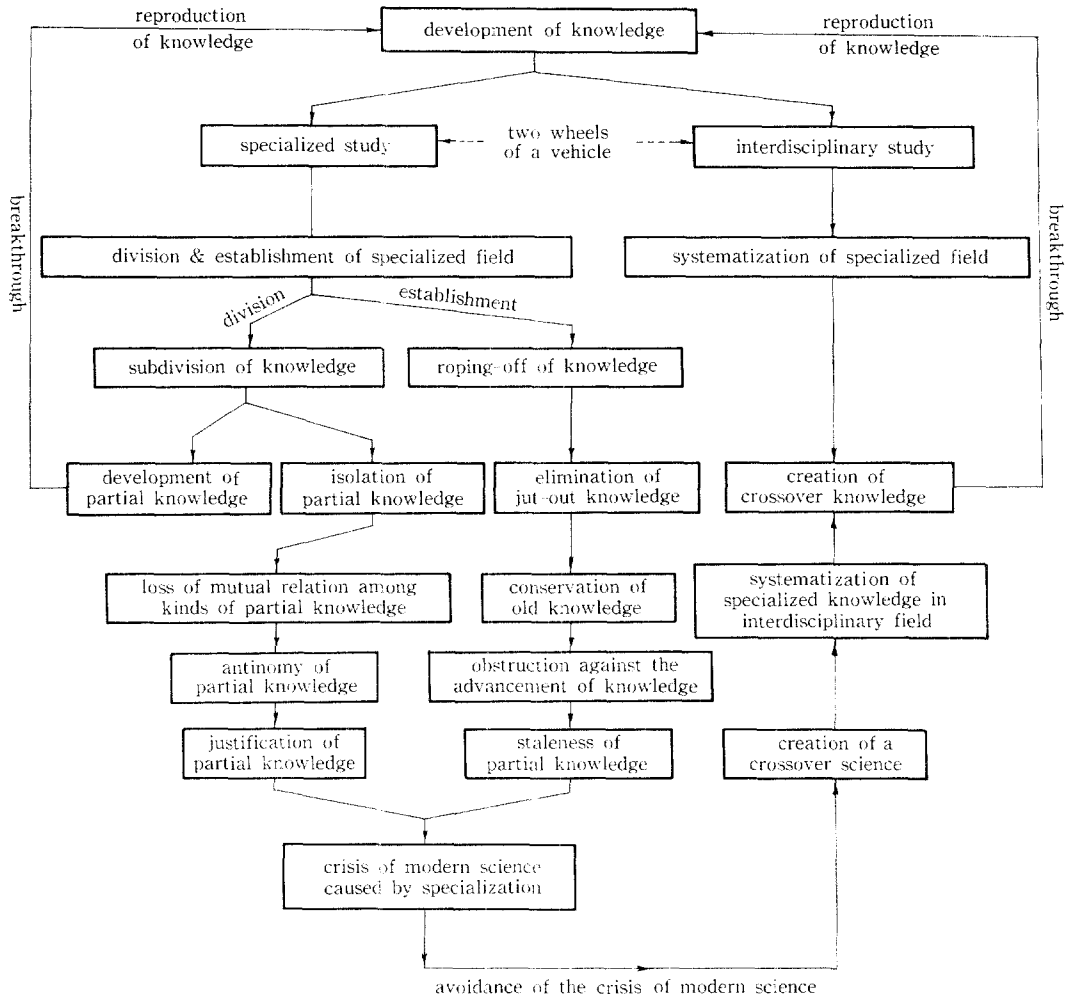


Fig 1. Necessity of interdisciplinary study

knowledge, on the other hand, is as below. When we try to deepen the partial knowledge after dividing the specialized field into pieces, we have to introduce the major premise that other things remain constant. Namely, if other conditions should change accordingly we had to take all the variations into account at the same time, and it is no longer the division of specialized fields and therefore it is impossible to deepen the partial knowledge. Consequently, the more divided the specialized fields, the less mutual relation among each kind of partial knowledge. There may finally occur a self-justification of partial knowledge. This is what we call the abuse of specialization, and its

end-point is the crisis of humanity as in the development of nuclear bombs. In short, the whole cannot be grasped only by examining the parts; furthermore, pursuing the parts alone is dangerous in that it makes indistinct the whole. In my view, this is the *first scientific harm* caused by specialization.

There is another harm in the division of specialized fields. It is the *roping-off of knowledge* due to the establishment of specialized fields. To make it clear, let us follow the other branch which starts with roping-off of the knowledge in Fig. 1. Establishing the specialized field stretches ropes around each bit of partial knowledge. As a result,

jut-out knowledge which belongs to no single specialized region is eliminated. But I think that in this very *jut-out knowledge*, there is limitless creativity. The roping-off of the knowledge will reject such prospective creative knowledge as heretical. In this way, the fixing of specialized knowledge preserves old knowledge. Consequently, an obstruction against the advancement of knowledge occurs, and then an archaic retention of partial knowledge follows. In my opinion, this is the *second scientific harm* caused by specialization.

Then, what is the way to evade these two crises? The answer is that, as shown by the flow line on the bottom of Fig. 1, we have to create a *crossover science* as a science in an interdisciplinary field which is completely free from present compartmentalization, and with it, to remove the evils of specialization. For that, it is necessary to design the systematization of specialized knowledge in the interdisciplinary field beyond the partitions of specialties as now exist. In other words, it is necessary to reorganize longitudinally and latitudinally the disjointed partial knowledge caused by longitudinal and latitudinal specialization, and by this, create a crossover region encompassing the *jut-out knowledge*. With breakthroughs of this way, we also have to plan the enlargement of knowledge and the development of knowledge. This is the direction for interdisciplinary study. In this way of thinking, specialized study and interdisciplinary research are in the same closed system and feedback system as well. They should be the two wheels of a vehicle indispensable to each other, that is, there is no interdisciplinary study without specialized research and there is no development of specialized study without interdisciplinary research. This is my thinking on the necessity of interdisciplinary study.

Next is my opinion regarding the propulsion of interdisciplinary study. See *cone of interdisciplinary study* in Fig. 2-1. In this *conical model of interdisciplinary study*, at the base are divisions of fisheries, agricultural engineering, (covering wood science and technology, food science and technology), agricultural chemistry, animal science,

agricultural and forestry economics, forestry, agronomy and horticultural science, and agricultural biology. These are parts of course organization sciences related to agriculture in the Faculty of Agriculture in Kyoto University. They at the same time indicate the specialization of studies on agriculture, and therefore vertical division of knowledge on agriculture. The directions of coordinates on the base show breakthroughs in partial knowledge on agriculture, that is, those directions of development of partial knowledge on agriculture, or enlargement of partial knowledge through specialized studies. Therefore, the *concentric circles of partial knowledge* at the base accordingly mean those of development of partial knowledge, or reproduction of partial knowledge. Of course, practically, those concentric circles cannot be described as true circles since there are differences in the degree or velocity of development or enlargement, but here, I assume an ideal model and so admit the true circle.

Interdisciplinary study recombines horizontally those partial knowledge specialties on the base, as suggested by the cone formed by the broad helix. Crossover knowledge is enhanced and entropy is decreased on the newly established interdisciplinary field as is formed above with a view to develop that new knowledge. In short, this is a systematization of crossover knowledge. Here I define systematize as first to set up an subject and then, under it, organize a series of phenomena or facts which occur fragmentarily, decreasing their entropy to attain the object most efficiently. Thus, the interdisciplinary study in agriculture consists in converting the idea of scientific research, which depends on specific study, into a new idea which is based on enlargement of crossover knowledge through the cooperation of interdisciplinary and specific study, where the Agricultural Systems Society plays the role of promotion.

Cones of interdisciplinary study grow larger in accord with the concentric circles of development of partial knowledge on the base. They are expressed as cone of interdisciplinary of the first degree for inner cone, and for outer cone, cone of

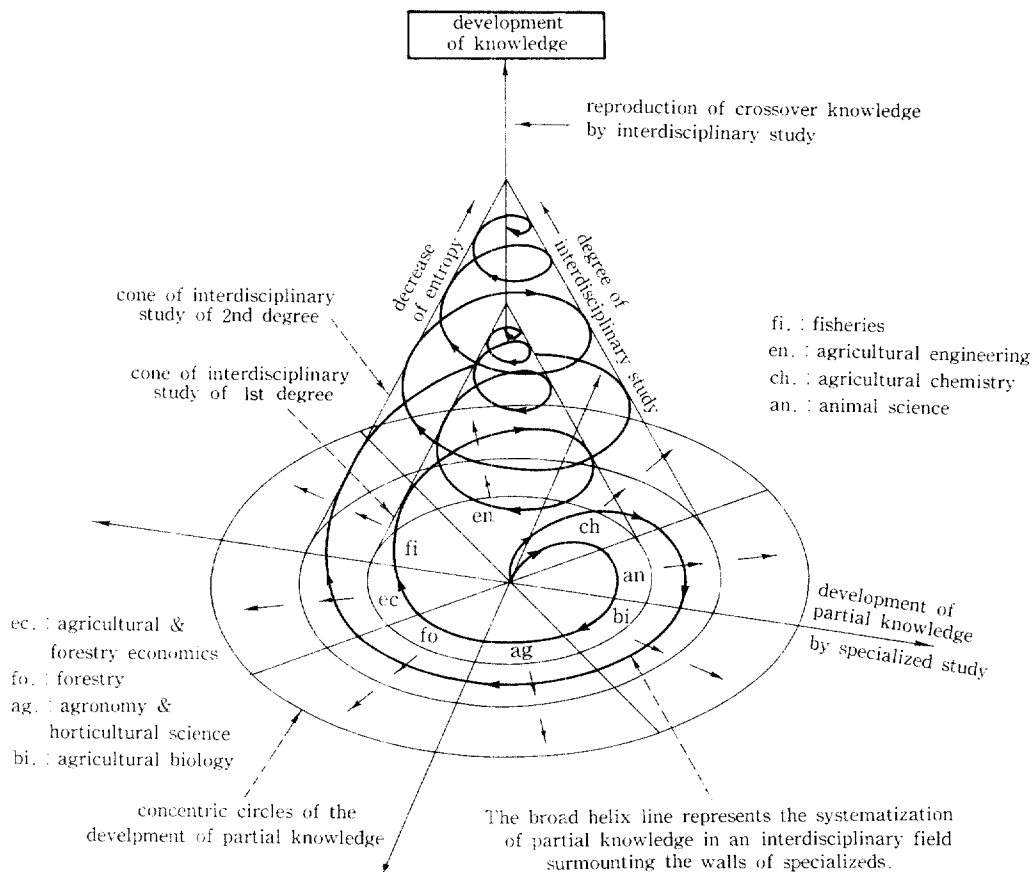


Fig 2-1. Cone of interdisciplinary study

interdisciplinary of the second degree which is 10 years later than the preceding one. As an example, the *pyramid of interdisciplinary study* in Fig. 2-2 explains the details of cone of interdisciplinary study of the first degree. On its base is a matrix whose two coordinates are examples of specific partial knowledge. Briefly, it can be called the *matrix of scientific information*. Here, I explain what this matrix means practically; following the line of economics on the ordinate toward the right, and stopping at the intersection with the vertical line of biology on the abscissa, one finds a new interdisciplinary region of *social ecology* because economics is a social science on the one hand, and biology treats ecology on the other. Similarly, if you follow the line of economics on the abscissa toward the left as far as the horizontal line of engineering on the ordinate, you will get another

interdisciplinary field of *social engineering*, and so on.

But we should not stop at this level. In true interdisciplinary study, has to be promoted the systematization of crossover knowledge to a higher degree by enhancing these lower interdisciplinary fields. Second and third strata, etc., show matrices of higher crossover knowledge. Thus in the matrix on the second stratum is crossover knowledge such as social ecology or social engineering on its coordinates, and at one of intersections *environmental human study* can be considered as a higher interdisciplinary field, as an example. The contents of these interdisciplinary fields are discussed in detail later. In short, this *pyramidal model of interdisciplinary study* insists that the development of knowledge is attained by systematizing that specialized partial knowledge within

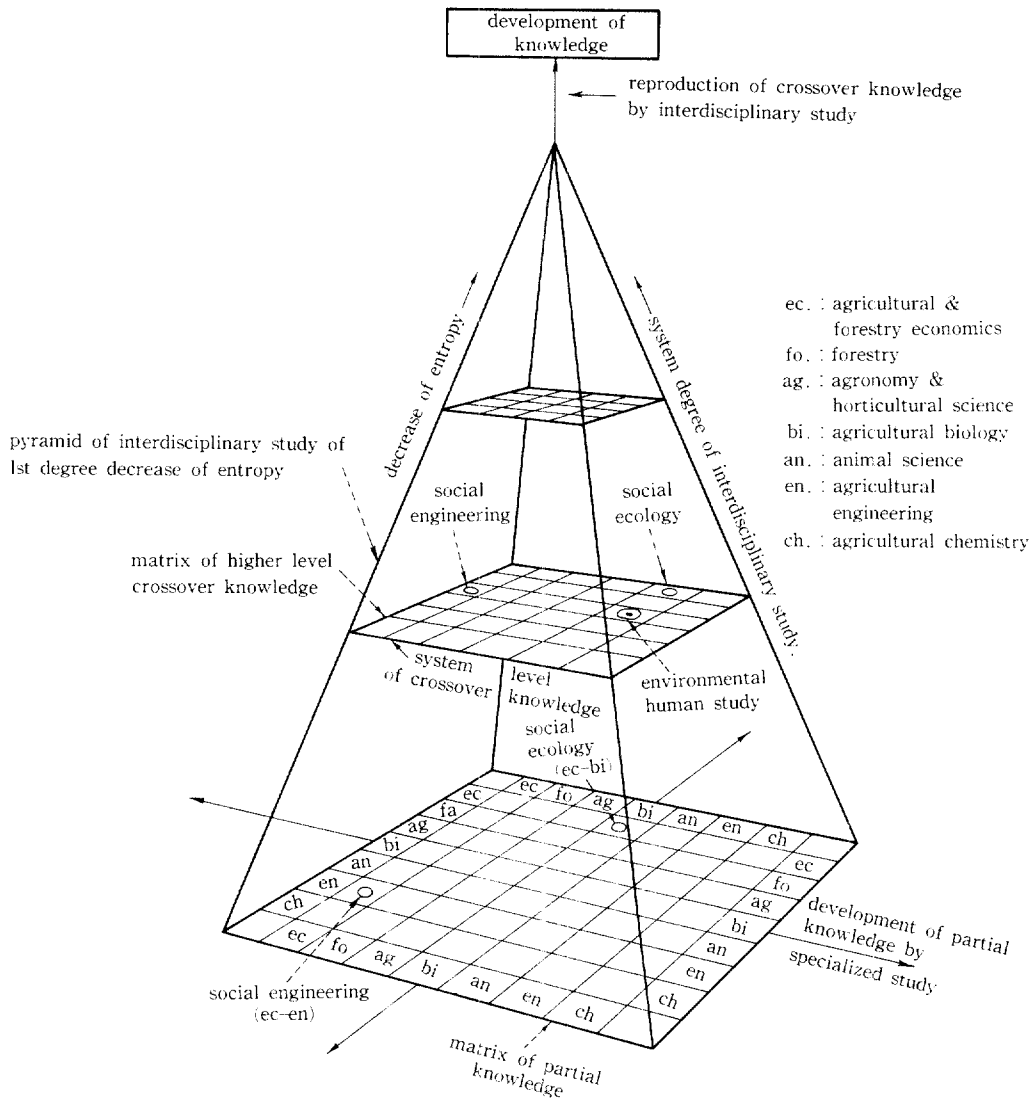


Fig 2-2. Pyramid of interdisciplinary study

the interdisciplinary region, and enlarging transversing knowledge at the higher dimension through enhancing the system level continuously.

INTER-ADMINISTRATION PROPULSION

Next, I discuss a plan for inter-administration propulsion. See the *cone of inter-administration propulsion* in Fig. 3-1. I am not sure if there is a term inter-administration, but I define it as the frontier field of administration, as compared with

interdisciplinary which is a frontier field of study. First of all, see the center of the base of this *conical model of inter-administration propulsion*. There, independently described are hard administration and soft administration. In my opinion, there are two types of administration. That which directly relates to production, transportation, finance, and so on(hard ones) on the one hand, and on the other, that which does not directly relate to those activities but treats planning or adjustment only(soft ones: ; to the former belong

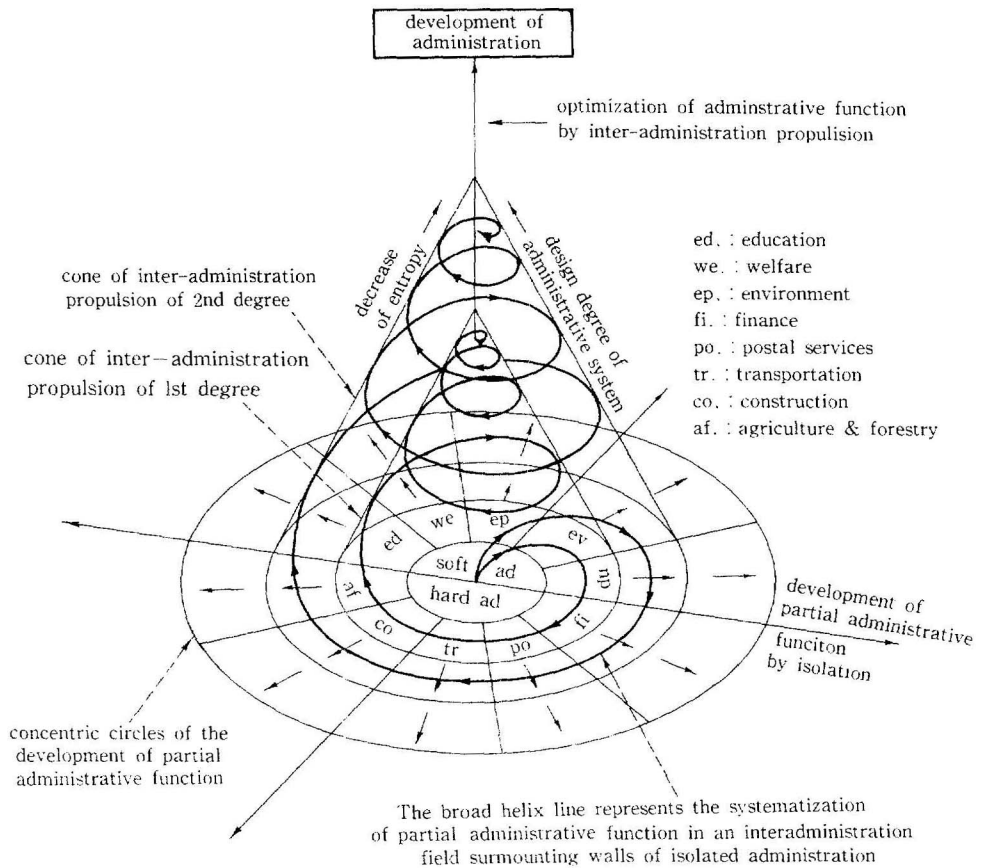


Fig 3-1. Cone of inter-administration propulsion

those administrations such as agriculture and forestry, construction, postal services, finance or the like and to the latter belong those administrations such as education, welfare, economic planning, environment, national land planning or the like. So, in the same way as what has been discussed in the explanation of interdisciplinary study, the coordinates on the base represent the direction of the development of the partial administrative function as the true concentric circles accordingly indicate.

The cone formed by the broad helix represents the systematization of transversing administrative functions in the whole inter-administration field, under the system purpose that the new idea of administration is to pursue the development of administration viewed from the inter-administrative light, after converting the centered valuation into

human-centered valuations. Further this cone grows larger as its base disk expands as first degree, second-degree, etc.

The *pyramid of inter-administration propulsion* in Fig. 3-2 has on its base a matrix which produces the reorganization of each partial administrative function. This time, hard functions are on the abscissa, and on the ordinate are the soft function. Following the line of hard agriculture and forestry administration on the abscissa toward the left and stopping at the cross point with the horizontal line of soft welfare administration on the ordinate, one finds *life administration*, quite a new inter-administration field, because the administrative function of the former treats the reproduction of lives of animals and plants while that of latter is related to the enlargement of human lives. Similarly, one will find *residential environment*

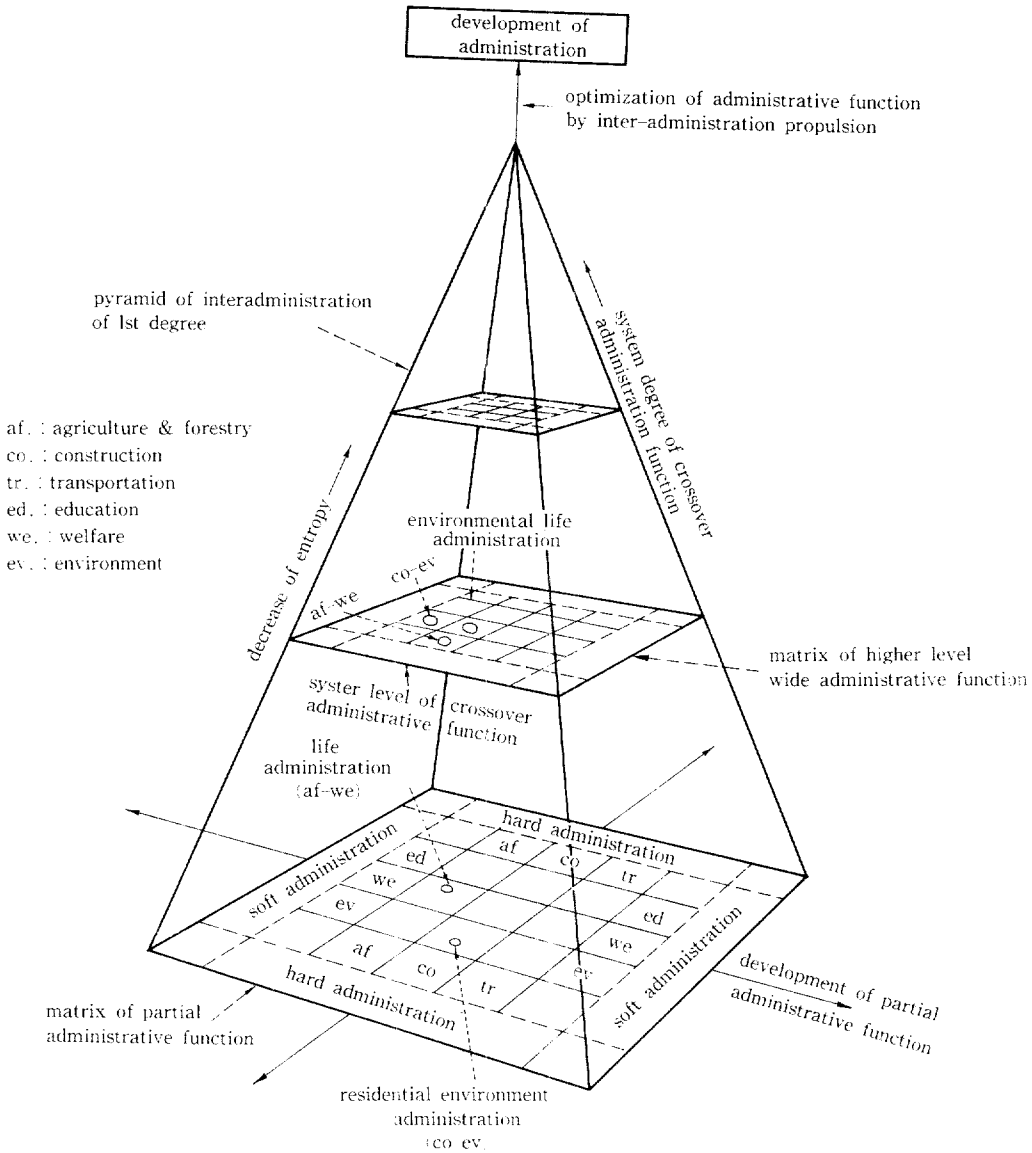


Fig 3-2. Pyramid of inter-administration propulsion

administration if one follows the line of hard construction administration on the abscissa toward the left as far as the intersection with horizontal line of soft environment administration on the ordinate.

The matrices of higher integrated administrative function on second or third strata are the means to decrease the entropy of inter-administration propulsion by systematizing those transversing inter-administrative functions in a new inter-adm-

ministrative field. Thus, on the second stratum for example, one finds the reorganization of crossover administrations foretold on the base of the former pyramid. Environmental life administration can be considered as a new administrative function derived from both residential environment administration and life administration.

NATIONAL LAND PLANNING

What is written above is my opinion on interdisciplinary study and inter-administration propulsion. Taking this opinion as a theoretical background, I discuss national land planning for the *fixed society* or the *permanent society*. In anticipation of the conclusion, this planning is based on the *Systems design of relationship among nature, space, and human beings*, the theme of this paper.

Here, the general method for systems design should be mentioned. We need three methods for the broadest division. First, the establishment of a systems object; second, the design of the contents of the system which are indispensable to attain that system object, in the order of functional

construction, elemental construction and positional construction; and lastly, optimization of the system with a view to minimize its entropy. When we adapt these methods to the systems design for national land planning, as to the establishment of a system object for national land planning, at the first step, the object is the pursuit of creation of a fixed society, after converting the material-centered valuation into a human-centered valuation. In the second step, functional construction is the design of soft functions for adequate national land creation, elemental construction is the practical design of each hard element which is required to carry out the functional construction, and positional construction is arrangement of each

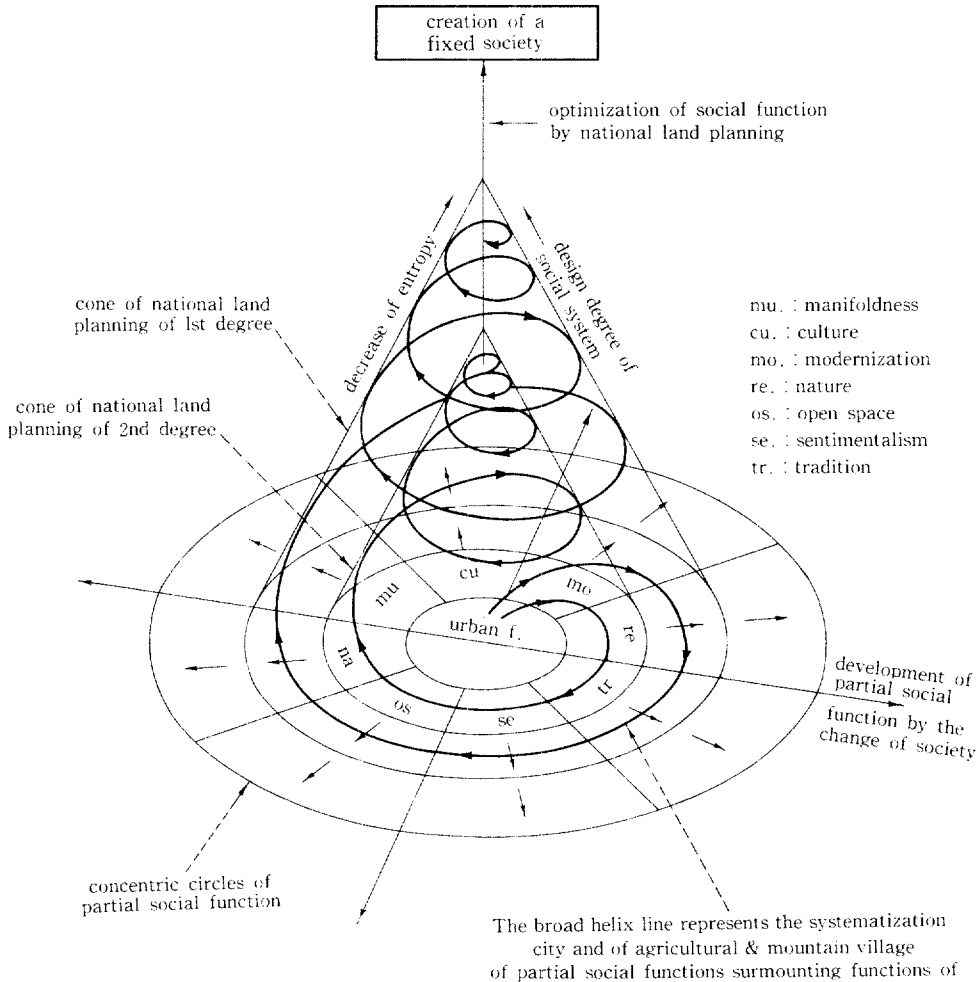


Fig 4-1. Cone of national land planning (functional construction: soft type)

element according to the elemental construction. In the third and final step, optimization is the leveling up of the systems design with a view to decreasing the entropy of the formative social system.

Here, I clarify the second step, that is, systems design for the contents of national land planning, which is the core of the whole systems design. First of all, let us think about functional construction for national land planning, a kind of soft national land planning. See the *cone of national land planning* (functional construction : soft type) in Fig. 4-1. On the base of the *soft conical model of national land planning*, at the center, are two types of soft functions : urban functions, and rural functions (functions of agricultural and mountain village). The components of urban functions are manifoldness, culture, modernization, recreation, and so on. The components of rural functions are nature, open space, sentimentalism, tradition, and the like. Thus the base of this cone represents the degree of specialization of social functions, and its coordinates indicate the directions of development of each partial function of society, therefore the concentric circles on the base refer to development of each function of society. Again here, I assume an ideal model and, accordingly the circles are true ones.

Next, let us consider *soft national land planning* in the light of functional construction. The broad helix shows the answer. The cone formed by this curve represents the systematization of crossover social functions on the curve represents the systematization of crossover social functions on the whole frontier field obtained by surmounting the barrier of both functions of urban area and of rural area under the system object of the new idea of national land planning is pursuing a permanent society after converting the material-centered valuation into human-centered valuation. The cone is enlarged in the first degree and second degree, etc. as the concentric circles of the development of each partial function of a society expand. For example, in the case of Japan, the first instance of nation-wide general land planning, the second instance of nation-wide general land planning, etc.

are shown respectively. At now, as the fourth nation-wide general land planning is promoted by National Land Agency, it corresponds the cone of the fourth instance of national land planning.

The *pyramid of national land planning* (functional construction : soft type) in Fig 4-2 shows the contents of the cone of first degree national land planning in detail as an example. On the base of this model is the reorganization of partial social functions on the base of the former soft conical model of national land planning. That is, on its matrix, the urban functions are on the abscissa while on the ordinate are the rural functions, and what the matrix produces is the whole frontier field of manifold social functions crossing over the frames of both functions of urban area and of rural area. Further, those matrices on second and third, etc. strata represent the matrices of high crossover social functions, each time the entropy of the preceding social system design is decreased through reorganization and enhancement.

Next we turn to the *hard national land planning*, the elemental construction under the above functional construction of the soft national land planning. See the *cone of national land planning* (elemental construction : hard type) in Fig. 4-3. At the center of the base, are those hard elements corresponding to soft functions of urban area and of rural area on the former soft conical model of national land planning. That is, to those soft urban functions : culture, modernization, recreation, and so on, those hard urban elements : schools, factories, residences (artificial ones) correspond, while to those soft rural functions : nature, open space, sentimentalism, and the like, those hard rural elements : forests, open space, farmland (natural ones) correspond respectively. (Incidentally, later, from this same viewpoint, I discuss these things in detail in Fig. 5-3 using two correspondig matrices : matrix for the fuctions of national land planning in Fig. 5-3-1 and matrix for the elements of national land planning in Fig. 5-3-2.)

The base of the *hard conical model of national land planning* in Fig. 4-3 represents the degree of

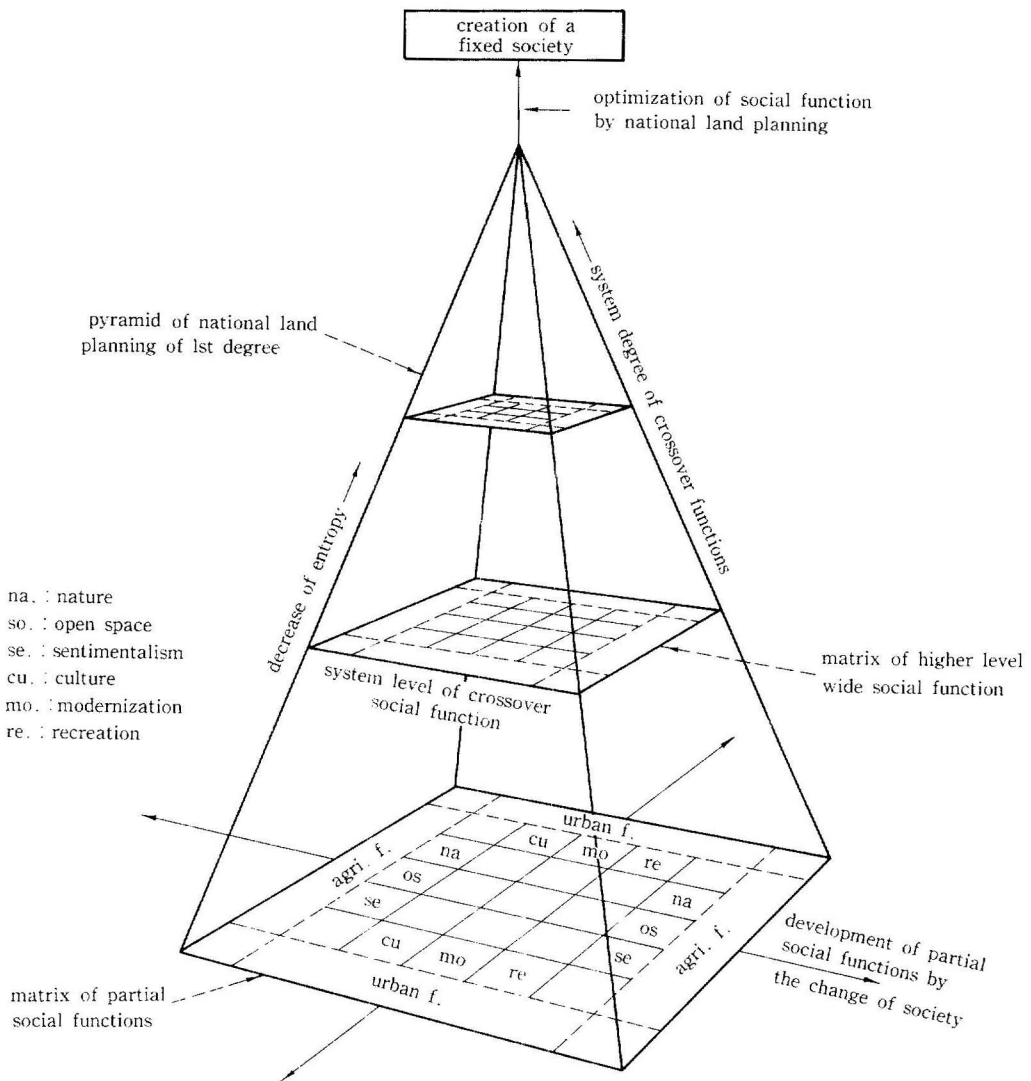


Fig 4-2. Pyramid of national land planning (functional construction : soft type)

the specialization of the hard social elements and their direction of the development of hard partial elements of a society. Those concentric circles indicate the development of partial social elements accordingly. This is also an ideal model.

With this preparation, let us consider hard national land planning. The cone formed by the broad helix represents the systematization of crossover social elements on the whole frontier field obtained by overcoming the difference between artificial elements and natural elements, under the same system object with that of soft national land

planning. In Japan, the concept of the city and that of the agricultural and mountain village are considered completely different; accordingly in national land planning, urban planning has been only for urban areas and rural planning has been only for the rural areas separately. As a result, it is always the stronger artificial urban plan that takes priority over the weaker natural rural plan, and a distorted society, the uncomfortable society of today has been formed. The broad helix indicates the complete systematization of various and manifold social elements which organize the

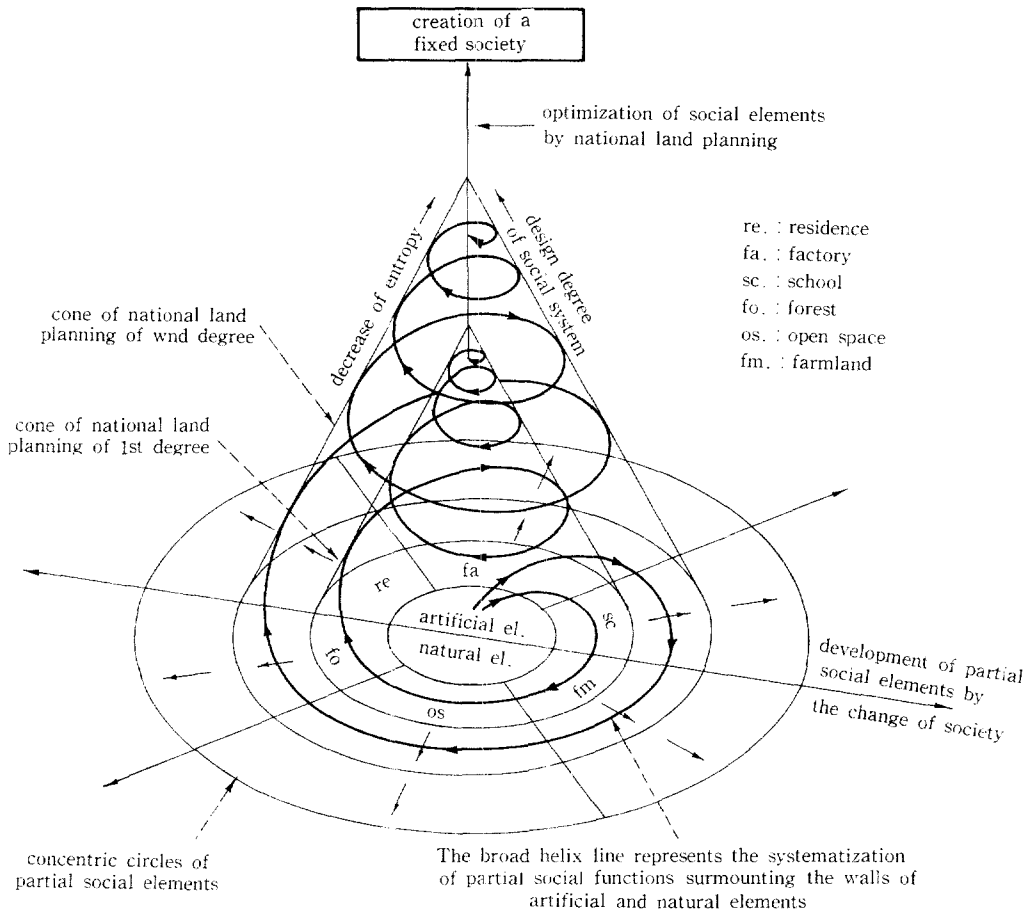


Fig 4-3. Cone of national land planning(elemental construction : hard type)

national land on whole frontier fields after surmounting the barrier between artificial elements and natural elements with a view to creating a *truly comfortable society*. Of course, this cone grows larger as the concentric circles expand as in the first degree, second degree, etc., Here, the details of the hard national land planning of the first degree is shown by the *pyramid of national land planning* (elemental construction : hard type) in Fig. 4-4.

Therefore, on the base of this *hard pyramidal model of national land planning* is described the reorganization of those partial elements such as the urban elements on the abscissa and those partial elements such as the rural elements on the ordinate, and as a whole, it represents the frontier field of global social elements. Those matrices of the highly

global social elements on the second and third strata are to decrease the entropy of national land planning through further enhancement and reorganization of global social elements in newly obtained frontier field at each step.

PRACTICAL EXAMPLES

The above is my theoretical opinion on interdisciplinary study, inter-administration propulsion, and national land planning. Next I consider practical examples of interdisciplinary study, inter administration propulsion, and national land planning in Fig. 5. I start with the example of interdisciplinary study in Fig. 5-1. The social sciences, particularly economics, comprise a field of study whose objective is the more efficient

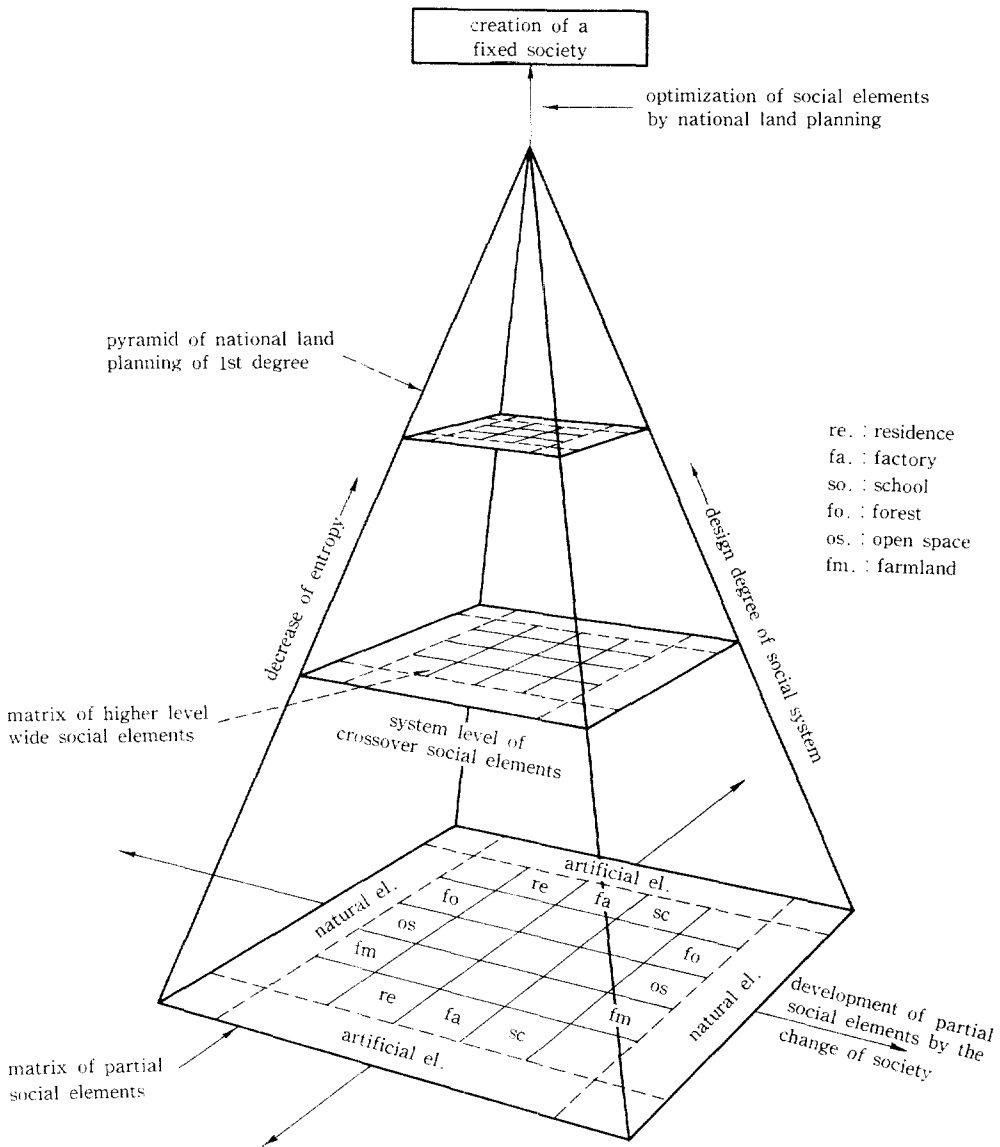


Fig 4-4. Pyramid of national land planning (elemental construction: hard type)

exploitation and utilization of resources by human beings, where the economic process of production → circulation → consumption is treated, but the effects to the ecological system through the exploitation or utilization of resources by human beings is completely ignored. So economics is a very limited specific partial science whose research object is to treat basically the process of economic circulation of resources as economic goods. Similarly, sociology is a very limited specific

partial science whose research object is to treat basically the social organization or social behavior of human beings, where the interaction between the ecological system and human beings is utterly disregarded. In short, both economics and sociology as social sciences are nothing but a limited partial science under the broad assumption of other things being constant. Meanwhile, biology is also a very limited specific science whose research object is to treat mainly the process of

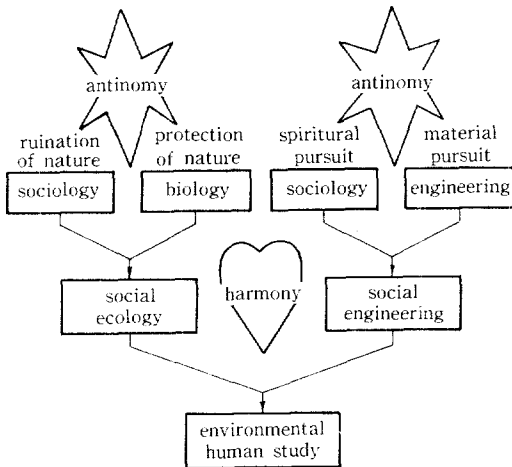


Fig 5-1. Example of interdisciplinary study

stable circulation of material and energy of plants or animals in the ecological system, where the broad assumption is made that there is no effect on nature by human activity.

Therefore, the more developed are these limited partial sciences independently and individually by the impulse of specialized study, the more serious becomes the antinomy of the destruction of the ecological system by the development of social sciences as opposed to the protection of the ecological system by the development of biology. Here, then, is the necessity of creating an interdisciplinary science, which spans the wall between the social sciences and biology. That is, the *social ecology* or *study of social environment*. See again the pyramid of interdisciplinary study in the above Fig. 2-2 where this idea is suggested.

Next, let us think about the relation between social sciences and engineering; the right half of the same Fig. 5-1. The social or economic phenomena are seemingly very complicated since they are the results of manifold actions of manifold human beings with manifold wants, but in fact, as the origin of the phenomena is in human beings themselves, we can recognize the phenomena with considerable stability and objectivity. It may be considered that social and economic statistics is the quantitative experimental data of wants or behavior of human beings abiding by the law of large

numbers. What is important here is that the realization of quantification of wants or behavior of human beings means that the social or economic phenomena can be the model of a general system theory. Because, in a general system theory, the objective model is the quantified model, so that not only natural phenomena but also social economic phenomena can be the objective model of a general system theory, after obtaining the data empirically as quantified social measurements. I think for the same reason, the application of a general system theory to humanities is too extensively used today.

In this way, the fact that social or economic phenomena can be an objective of a general system theory in system engineering means it is possible to design a social system conforming to a general system theory in system engineering and examine its optimization. That is, it means the possibility of interdisciplinary study as a collaboration of social science and engineering. Unfortunately, however, until recently, there was no such instance of interdisciplinary study and therefore, the more developed was each specialized study independently and individually, the more pronounced antinomy is produced between the social studies, above all, pedagogics or applied psychology which emphasize the profoundness of heart as a soft aspect of human life in these studies and engineering which lays stress on the plentifulness of material as a hard aspect of human life. The result is today's rich in material but poor in mind.

Here is the necessity of creating an interdisciplinary science which surmounts the barrier between the social sciences and engineering and reorganizes the crossover knowledge in an interdisciplinary field. See again the pyramid of interdisciplinary study in Fig. 2-2. There I have already predicted the necessity of such *social engineering*.

The above is my opinion on social ecology and social engineering as a new interdisciplinary sciences. I think, furthermore, it is absolutely necessary to develop such research in higher dimensional interdisciplinary fields in order to

surmount the walls between social ecology and social engineering for realizing the *optimum harmony of nature and human beings*, which is the eternal problem for the existence of mankind. See again the above pyramid of interdisciplinary study in the Fig. 2-2 to ascertain this fact. There the necessity of *environmental human study* is foretold. In science, three factors, i.e. demonstration, corroboration, and recertification are required, and accordingly three aspects, that is, theory, experiment, and method are indispensable. Usually the social sciences are lacking, however, in experiment and method of these three aspects, so that it cannot be called a genuine science in a sense of modern science. To put it strongly, it is a science that depends on intuition and experience. Needless to say, it is by no means possible to design the social system, nor still more to optimize it only by intuition and experience without experiment and method, because the social system is so complicated and manifold. Here it is absolutely necessary to bestow corroboration and recertification on social science by converting the substance of reality to a different form i.e. a mathematical model and making simulation on it. By doing so, at last, the social sciences reach the level of genuine science and only through such a new social science is the optimum harmony of nature and human beings realized, and we can follow the path indefinitely to survival. *Environmental human study of social experiment study* is a new interdisciplinary science overcoming the wall between social ecology and social engineering.

Next, I explain a practical example of inter-administration propulsion in Fig. 5-2. In my opinion, in Japan the final objective of the administration by the Ministry of Agriculture, Forestry, and Fisheries is the establishment of a state on the basis of agriculture. On the other hand, the final objective of the administration a the Ministry of International Trade and Industry is the establishment of the state on the basis of industry. In Japan, the guideline of national policy after World War II has consistently founded on the basis of

industry and has promoted the one-sided development of industry. The result is a serious antinomy between agriculture and industry as symbolized by *Industry thrives while agriculture perishes*. My long-cherished advocacy on this point is that we should stop regarding the relationship between agriculture and industry as developed vs. developing but instead, look upon it as *co-existence and mutual prosperity* and aim at the co-existence of agriculture and industry. And to carry this out, it is absolutely necessary to realize the collaboration of the administration by the Ministry of Agriculture, Forestry, and Fisheries and of the administration by the Ministry of International Trade and Industry by surmounting the high wall between them, that is, such a new administration on the frontier field as an *administration by the Ministry of Agriculture and Industry* is inevitable.

As to the relationship between the Environmental Agency and the Ministry of Construction, the administrative objective of the former is the conservation of the environment, while that of the latter is urban improvement. Between them, however, there is a relation of antinomy and in Japan, it is still the construction administration that has priority over other, environment grows more and more serious, and evil phenomena such as the destruction of nature or urban blight come into existence. Here, we need an *administration by the Ministry of Residence and Environment*, an administration in a frontier field, which means the collaboration of the administration of environment and that of construction in an inter-administrative field by surmounting the high wall between them in order to resolve that antinomy and to realize a *proper sharing of space* between nature and mankind.

The above is my opinion on the necessity for administration of the Ministry of Agriculture and Commerce and of the Ministry of Residence and Environment. Here too, we require the creation of a new administration for a higher dimensional global inter-administrative field through overcoming the division between these adm-

inistrations, aiming at a *more truly adequate established society*. And this should be the mission of the national land administration. In other words, it is the National Land Agency that stands at the summit of such an ideal administrative system as is obtained by the inter-administration propulsion and that manages its system design. In this sense, it is the National Land Agency that stands at the top of the whole hierarchy of all the administrative systems. Therefore, its name, in my opinion, should be raised in rank from the National Land Agency to the *Ministry of National Land*.

IDEAL NATIONAL LAND PLANNING

-systems design of nature, space, and human beings-

Next is my opinion on the practical designing of national land planning. See the soft type pyramid of national land planning in Fig. 4-2. On the base of this model, there is a matrix on whose abscissa and ordinate are the urban function and the rural function as soft fundamental functions of national land. Its details are in the *fundamental matrix of national land planning* (functional construction: soft type) in Fig. 5-3-1. In this figure, those representative functions of urban life such as culture, modernization and recreation are on the abscissa while on the ordinate are nature, open

space, and an sentimentalism(an emotional factor), representing the agricultural and mountain village. Thus from this functional matrix of national land planning, if you follow the first row, you get an important frontier field of social function such as *nature-culture*, *nature-modernity(modernization)*, and *nature-recreation*, and if you follow the second row, you get an important frontier field of social function such as *open space-culture*, *open space-modernity*, and *open space-recreation*, further if you follow the third row, you also get an important field of social function such as *sentimentalism-culture*, *sentimentalism-modernity*, and *sentimentalism-recreation*. This is my model for functional construction of national land planning.

Once the functional construction of national land planning is established as above, the next step is to construct those elements which carry it out. This is the *elemental construction of national land planning*. The theoretical methods are shown in the hard type pyramid of national land planning in preceding Fig. 4-4. On the base of this model, those hard fundamental elements such as artificial elements and natural elements are written horizontally and vertically respectively on a matrix. Its details are in the *elemental matrix of national land planning* (elemental construction: hard type) in Fig. 5-3-2. In this figure, those

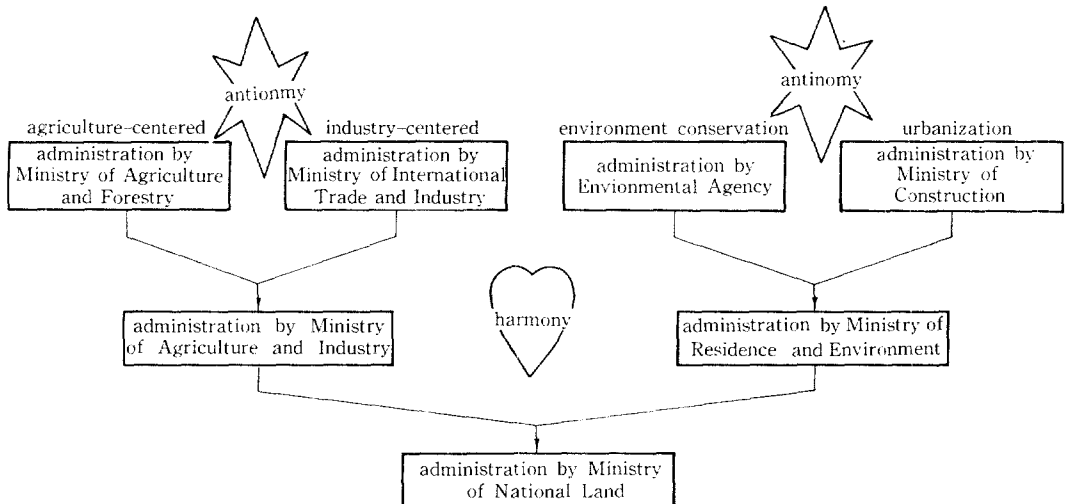


Fig 5-2. Example of inter-administration propulsion

Fig 5-3-1 Functional matrix of national land planning(functional construction : soft type)

urban function rural function	culture	modernity	recreation	urban function rural function
nature	na-cu	na-mo	na-re	nature
open space	os-cu	os-mo	os-re	open space
sentimentalism	se-cu	se-mo	se-re	sentimentalism
rural function urban function	culture	modernity	recreation	rural function urban function



Fig 5-3-2 Elemental marix of national land planning(elemental construction : hard type)

artificial ele natural ele	school	factory	residence	artificial ele natural ele
forest	fo-sc (woodland school)	fo-fa (woodland factory)	fo-rs (woodland city)	forest
open space	os-sc (school buildings with open space)	of-fa (factory with open space)	os-rs (city with open space)	open space
farmland	fm-sc (rural school)	fm-fa (rural factory)	fm-rs (rural city)	farmland
natural ele artificial ele	school	factory	residence	natural ele artificial ele

representative functions of artificial elements such as schools, factories, and residences are on the abscissa while on the ordinate are forests, open space, and farmland which represent the natural elements. Thus, from the first row, those important frontier fields of social elements *forests-schools*(rural schools), *forests-factories*(woodland factories), and *forest-residences*(woodland city); from the second row, such as *spaces-schools*(school buildings with open space), *space-factories*(factories with open space), and *space-residences*(city with open space); further from the third row, *farmland-schools*(rural schools), *farmland-factories*(rural factories), and *farmland-residences*(rural city). This is my *model for elemental construction of national land planning*. Here, we must again make sure that this hard elemental matrix of national land planning and the preceding soft functional matrix of national land planning have a complete correspondence.

At the final stage, we have the *ideal national land planning* at which we aim by summing up these soft functional constructions, hard elemental constructions, and their positional constructions.

That is what I call the *system model of nature, space, and human beings* in Fig.5-4. In this model, as mentioned in Fig. 4-1, the creation of a *fixed society* is predicated under the new system objective converted from usual *material-centered valuation* to a *mind-centered valuation*. From this point of view, however, it seems that in this system, only the amplitude of mind is pursued. But to enjoy a full spiritual life, at the same time, an affluent material life should be guaranteed as well. This fact appears in an old Chinese saying, "People practise courtesy after they are satisfied with clothes and foods". So in the system of nature, space, and human beings richness both in material and mind is to be sought simultaneously and harmoniously in order to assure a rich life both materially and mentally. Consequently, the system of nature, space, and human beings designed from this point of view, should be the system which may create supreme values both in mind and material by optimizing the placement of different elements from the natural system and the artificial system. Accordingly, for this system, the input is those people who desire a rich spiritual and material life

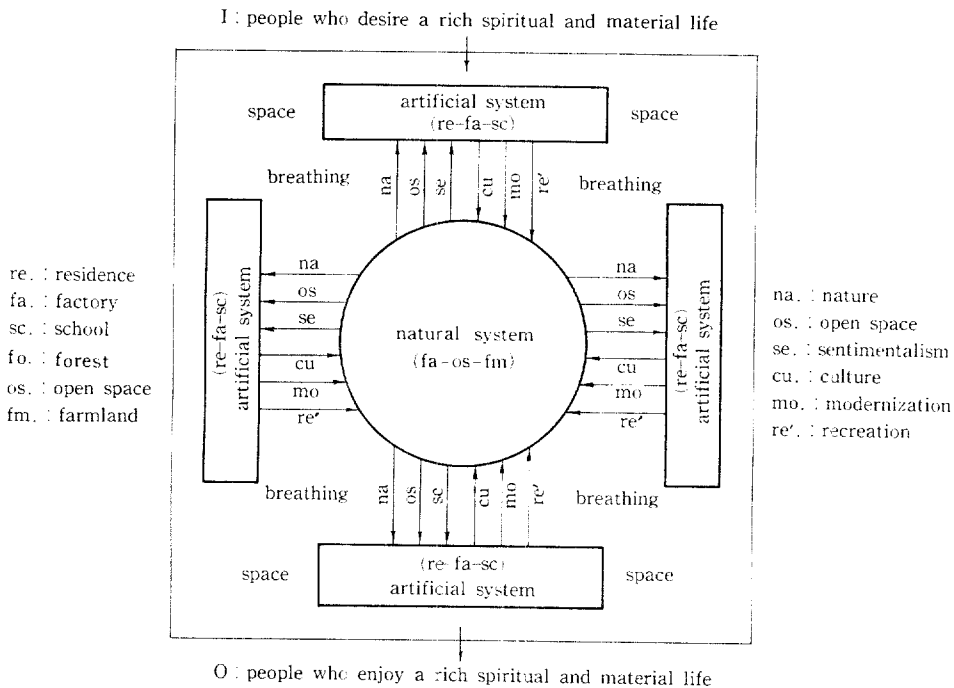


Fig 5-4. Systems design of relationship of nature, space, and human beings

and output is those people who enjoy a rich spiritual and material life.

In this way, in the system of nature, space, and human beings, forest, open space, and farmland as natural elements, and school, factory, and residence as artificial elements are distributed in optimum condition, and of the natural elements, nature, space, and the sentimentalism the emotional factor while of the artificial elements, culture, modernization, and recreation are produced and spread out, and *breathing silently* with each other. It is the same as the co-existence of plants and mankind exists, there is needed *space* or *room* to contain the air. This is the crux of the reason that what I call the *system of nature, space, and human beings* should not be a system of nature and human beings but a system of nature, space, and human beings.

NATURE AND JAPANESE THINKING

-Thought on space-

I clarify the point with my own outlook on *nature and Japanese spiritual thinking*.

IKU YAMA-KAWA KOESARIYUKABA SAB-
ISHISANO HATENAM KUNIZO KYOMO
TABIYUKU

This may be translated I have crossed so many mountains and rivers to find such a utopia where my loneliness is extinguished but in vain. still today I resume another journey.

The natural features of Japan as a sylvan country address man incessantly through the nature of its changes from season to season. Man addresses nature in turn. It can be said that WAKA (a 31 syllable Japanese poem) or HAIKU (a 17-syllable Japanese poem) which are peculiar to Japan have been or are born through the dialogues of nature and man. I feel for this reason that when the Japanese speak of themselves, there is a tendency for them not to speak directly but by entrusting themselves to nature. The exquisite verse of Bokusei Wakayama above is also the *indirect self-expression* in which he stated so hauntingly his profound sad feeling by availing himself of mountains and rivers. Is it too much to say if I

further assert this fact has produced such *culture of space* as *speech in silence* or *speaking without any word*, namely the *expression with room*?

I may remark that the Japanese regard even the wind or waves as the respiration of nature and perceive one of those intervals of breath as *wind interval* or *wave interval*. And to such Japanese, their *sensibility to interval* or *thought on empty space* finds its way into Japanese calligraphy in which the *blank* itself has a meaning, or Japanese gardens such as the stone garden of Ryoanji temple in Kyoto in which the *vastness* as nothing but a set of stones itself carries the meaning, or Japanese buildings in which the TOKONOMA is indispensable though it has no practical usage, or further, in the Japanese art of public entertainment such as NO or KABUKI in which the so-called *blank* itself has the supreme artistry. This is not all; SUMO, a national sport of Japan can be called a *sport of space* since in it a kind of *interval*, SHIKIRI has an important meaning.

In this way, Japanese spiritual thinking on space appears in all things such as literature, art, buildings, sports and so on. Here, I mention the ideal state of the Japanese residence and its fixed abode, truly adequate housing area, with relation to the main theme of this paper, the *systems design of nature, space, and human beings*. In western buildings, an empty space is filled up with sculptures, tapestries, cabinets, desks, sofas, and so on, while in Japanese traditional buildings *blank space* or *empty space* is especially loved and respected as an ENGAWA, a Japanese style of veranda, or and IMA, a Japanese living room with TATAMI mats, or TOKONOMA; all of these are in the open air or at most protected by thin SHOJIs FUSUMAs from outside space. I find a typical example in the CHASHITSU or in the spirit of CHANOYU. As a result, for the Japanese, *space* or *blank* is not the state of absence or emptiness but state of *existence* therefore an *intentional space*. Thus it follows that the truly expected residence for the Japanese is the very *residence of space* with a margin.

The above is my first thought on nature, Japanese thinking, and its residence. This is not

all. One more important point of Japanese residence is that its building materials are wood from a forest, that is, *organic materials*. Because of this, Japanese buildings have *slight warmth* or *serenity* or *charm* which I think peculiar to them and hardly found in those buildings made of artificial inorganic materials. In short, because wood is originally a *living thing*, it gives warmth or serenity or charm to the hearts of human beings who are also living things. It seems for this reason that the Japanese feel calmed down when they hear just a wooden house.

In this way, the residence and the fixed society, truly adequate housing area which are or should be the hearty aspiration of the Japanese are not a cold and blankless one of steel and concrete and stone built in the pursuit of function and efficiency but a *warm and blank-filled one* with wooden materials and free space in which we feel comfortable, serene, and at ease, and with such a permanent society with nature and space to cover it.

However, in Japan, after World War II, urbanization progressed rapidly, and in cities nature and open space decreased remarkably, so that land prices shot up. This resulted in those prefabricated houses or multistory residences without margin or personality or sentiment or warmth in the pursuit of efficient land usage and residential function, and therefore, residences in Japanese cities have changed into non-wooden, ferroconcrete apartment houses. But in Japan, this tendency may cause a loss of personality or sentiment or creativity of those who grow up there, creating so many *apartment men* under the policy of non-woodenization and apartmentization and leading not only to the *desert city* but also to the *slumism of man himself*. What causes my uneasiness is that the destruction of nature, loss of free space, and the non-woodenization and multistorism of ferroconcrete apartmentization of residence under the present Japanese policy on cities and residences might, in the end, remove the sentiment for nature of the Japanese and thereby their spiritual thinking and spiritual richness or creativity in its turn, and the unique Japanese

culture.

Thus, the aim of this paper is to assert the fact that regardless of urban policy or residential policy or educational policy, all the origins of the design of national land planning are found in *nature* and *space* according to my own thinking on nature and Japanese thought. In this sense, at the end, I quote the first phrase of MAKURA NO SOSHI by SEISHO-NAGON (the most famous Japanese female writer, 965-?) and mention again the excellent emotion on interval or thought on space of the Japanese and the fact that the origin of this beautiful literary expression of *blank is* in the very *nature* and *space*.

HARU WA AKEBONO

YOYO SHIROKU NARIYUKU YAMAGIWA
SUKOSHI AKARITE

MURASAKIDACHITARU KUMO NO
HOSOKU TANABIKITARU

This may be translated :

In spring (the best thing is) the dawn

The edge of the sky over the mountains becoming
brighter by and by

Getting slightly scarlet

And slender violet clouds are trailing.