

# Two Paradigms of Endogenous Development: Production Process & Supply-demand Relationship

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Received 14.12.2011; Accepted 05.03.2012

## ABSTRACT:

Different world views and philosophies in defining development problems and their solutions derive currently from different disciplines. They refer in many respects to the principle of cause-effect as a fundamental relationship between phenomena. The history of differing values and attitudes presented in management and design indicates the importance of this relationship.

This sort of knowledge and some of the values and attitudes needed by built environment professionals can be explored by the Endogenous Development Model and its associated internal paradigms of production-process and supply-demand relationships. The first is responsible for the evolution of thought in a diachronous space-time dimension and the second causes the generation of typologies created in a synchronous three-dimensional space.

Particular emphasis is placed on the meaning of development in the context of endogenous people-centred development. The paper addresses the fact that the means of production and the associated supply-demand mechanism are generated in the west. Indeed, for some today, what is seen as the historical process of "Westernization" may well be rejected outright as a goal for developing countries.

**Keywords:** *Cause-effect, production-process, supply-demand, development, and progression.*

## INTRODUCTION

Development may be regarded as a goal or a process which involves causal relationships. Unless we understand what development means, both in terms of goals and in terms of process, there are likely to be problems. Different world views and philosophies in defining development problems and their solutions, as currently used in different disciplines, refer to cause-effect as a fundamental relationship between phenomena. The history of differing values and attitudes presented in management and design indicates the importance of cause-effect relationship which is one of few general principles in philosophy, i.e. existence-nonexistence, necessity-possibility, deterministic-nondeterministic, presence-absence, and unity-diversity, and cause-effect. The sort of knowledge and some of the values and attitudes needed by built environment

professionals can be explored by the Endogenous Development Model and its associated paradigms.

Thus, this paper is an attempt to discuss some aspects of production-process and supply-demand, as two paradigms of the Endogenous Development Model, tracing their value by analysing different debates about the cause-effect relationship. Particular emphasis is placed on the meaning of development in the context of endogenous development, people-centred organization, and production process.

This new dimension of development is as yet only partly understood and articulated while dramatic changes are taking place throughout the world at an accelerating rate. During this transitional process, severe stresses and strains are felt by nations, regions, corporations, communities, and individuals. Many of these either ignore the changes or attempt to explain them away using old paradigms, thus minimizing their impact.

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According to Henderson (1978), individuals and all their collectives should be trying to adapt to these changes. Such adaptation that is now taking place, is occurring only at the lower level of the society. Therefore, it is at the lower levels that solutions to our social problems should be sought, found, and implemented. For example, it is at the grass-roots level that a "counter economy" and "counterculture" are being created. After WWII, many disciplines operated in an intellectual environment, believing that development and change would effectively replicate the experience of those countries which had already industrialized during the 19th century, in particular that development would follow the pattern of Britain, France, Germany, the United States and Japan (Ingham, 1993). Taking evidence from these cases, economists stressed the importance of increased savings and capital accumulation in economic growth. Moreover, few economists and policy makers are now prepared to make the ready identification of "economic growth" with "development".

Henderson (1978) asserts that economic systems, like their biological counterparts, eventually reach a point at which they stop growing. At this point growth gives way to differentiation and maintenance. Similar to this situation, it seems that in our country competition for previously abundant resources is replaced by cooperation in the use of those that are scarce, and exploitation of the ecosystem converts into its restoration and preservation. What is needed most to reinvigorate our societies and their economies is a change of paradigm, a new perspective, a different way of viewing the world. Policies derived from the old and outworn paradigms cannot do the job.

### New Concerns in Development

Historically, the development of most of the currently advanced countries was made possible by what Gerald Piél (1966) called "coercive deprivation". This involved economic exploitation of a large portion of their populations or that of other countries. Ackoff (1984) refers to a citation of the nineteenth century historian Alexander Herzen who commented on this process: and says that, In order to develop, it is necessary that things should be much better for some and much worse for others; then those who are better off can develop at the expense of others." The "some" could be nations as well as individuals, as was the case in much of past colonialism.

Answering the question "what is the meaning of development?" several generalizations can be made based on new concerns. Ingham (1993) summarises some of them as:

- a. *The historical dimension*, which is crucial and is misleading to expect a simple replication of 19th century industrialization and growth;
- b. *Structural change*, whereby the agricultural sector declines concerning the manufacturing and service sector, remains important though there may be costs in terms of increased international dependency, unemployment and loss of the traditional way of life;
- c. *Modernization*, which encompasses social, political and

cultural changes as well as the purely economic, has many critics;

d. *The benefits of economic growth*, which are not always distributed equitably;

e. *Criticism of economists*, for having an exclusively "goods-centred" view of development rather than a "people-centred" development ethic. There is an increased focus toward the concept of human development. Decentralization, participation and grass roots rural development are the issues of more interest nowadays;

f. *Sustainable development*, a concept little used by development economists until quite recently, being the preserve instead of environmentalists, conservationists, ecologists and the like;

g. *Political and civil liberties*, which seem to go hand in hand with improvement in the quality of life, as measured by life expectancy, infant mortality and real national income per head; and

h. *The need of economists*, to be made aware of the different philosophical perspectives out of which their ethical judgements may emerge.

Development is a process in which individuals or societies increase their abilities and desires to satisfy their own needs and desires and those of others. It is much more a matter of learning than of earning. It is better reflected in quality of life than in standard of living. It has become increasingly apparent that the continued economic growth of a nation is not necessarily accompanied by improvements in the quality of life (Ackoff, 1984). Many argue that some of the most economically advanced countries are now increasing their standards of living at the expense of quality of life.

Development is not just a matter of applying technology to our problems. Technology is not a guaranteed forerunner of development. R. J. Forbes (1969) points out to this fact that technology is not culturally neutral. He says; that it "It is a product of Western ideas and value judgments which without many of the impulses guiding it would be meaningless or even destructive". The imposition of technology on an ancient culture could be disastrous to that culture. It can lead to, he says, "collapse of the class and caste structure on which such a civilization depends". It can also make a small minority of rich people richer and the large majority of the poor poorer. Development is the desire and the ability to use what is available to continuously improve quality of life. This ability cannot be given to others even by those who have it. It must be developed in and for oneself. Therefore, development must begin with the desire to improve one's lot.

Economic and social conditions in many countries are unstable, and various attempts to superimpose a highly developed capita-intensive industrial system upon such conditions have worsened the problem of poverty. Economic and social development in the rural areas, where most of the poverty in Third World Countries is concentrated, can be fruitful only by a bottom-up, lateral, and endogenous development that considers indigenous social and cultural realities. But, we are

witnessing the fact that the highly developed societies of today are the first dominantly urban societies in history. Most of their members live in environments that are more manmade than natural. Mismanagement of these “artificial” environments has significantly increased the rate of deterioration of the natural environment. The life-supporting capabilities of the natural environment are being reduced at an increasing rate especially in so called advanced countries.

As some rural communities confront the harsh realities of current economic and ecological conditions, they resort to or rely on indigenous, tacit knowledge and their cultural resource base to help them deal with the stresses on their household and domestic economies. There exist in those communities traditional institutions, structures and process that have been set up to satisfy basic societal needs. These are part of what Jobba (1989) calls “nonconventional” resources of society that can be mobilized for alternative social development. They include cultural resources of indigenous peoples such as social consciousness and community identity that generate common responsibility.

Concluding the discussion about development problems, it is necessary to mention that all the general bias, seen for instance in Ackoff’s writing, relies on clinical analogies (Islami, 1995). His assessment of the notion of problem in a “symptomatic” view is clinical. This paper attempts to focus the debate into more rigorous areas such as the concept of the Kuhnian paradigm (1970). A paradigm, Kuhn says, consists of a set of implicit rules for identifying a valid scientific problem, and for recognizing what is a solution to it. Rosenhead (1990) identified three conflicting paradigms (official, reformist, and revolutionary) contending for ascendancy. “Production process” is and “supply-demand” are two revolutionary paradigms in an endogenous development context which helps us to identify the main problems and their solutions.

### A Theoretical Framework and Research Methodology

In system view, relationships between components which are externally and intentionally structured and have direct function, are under consideration. Society should be a system made of components. There are only sub-systems in some societies, according to their tacit knowledge, but the whole

systems are missed or do not work properly because of the specialization and fragmentation of their organizations. Structuring the whole system is the basic factor in these societies. These components are objective, subjective, visible, or invisible and their relationships are also visible or invisible. Furthermore, a system’s performance depends on how it relates to its environment - the larger system of which it is part - and to the other systems in that environment. For example, an automobile’s performance depends on the roads over which it is driven and on the presence and driving of other automobiles on those roads. Therefore, the attempt is to evaluate performance of a system as a part of the larger system that contains it.

This paper is to synthesize several attitudes to identify the emerging point of the problems holistically. Therefore, it employs an analytic approach for finding models to solve them. Obtaining this purpose a diachronic mode of thought is used to trace interaction between objects, events, and their properties chronologically besides having synchronous view of the world to define their relationship systematically. Hillier et al. (1972-73) maintain that Synchronous mode of thought is the generation of typologies descriptively and diachronous mode of thought is the generation of sequence theoretically (Figure 1).

The synchronous dimension is associated with “description” and the diachronous dimension is associated with “theory”, in sociology. The transformation approach rewrites both strategies at a fundamental level, locating at the level of theory. Using the notion of “generation” to show connections between different observable forms and using the notion of “evolution” to show relation between two states of one invisible concept, and connections in terms of time sequences are explained. Hillier et al. (1972-73) put forward another citation and say that the whole question of causality in its naive form is made redundant in favour of relations which are pervasively generative/evolutionary and connected without being explicitly causal at every level of resolution. The observation that in the last analysis in all systems some local determinism prevails is to say no more than that no event is arbitrary, and this is, of course, trivial.

### Cause-effect Relationship

Because of the difference between Generative/evolutionary and causal relationship it is worthy to mention a point referred

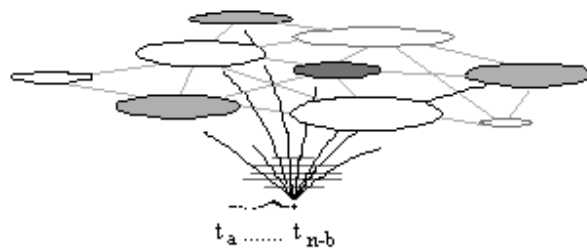


Fig 1: Evolution of theories in deep structure and generation of typologies in surface structure

to by Tabatabaei (1953) that the cause-effect relationship and other general concepts of philosophy, i.e. existence and non-existence; unity and diversity; necessity and possibility; presence and absence; deterministic and nondeterministic; are not compounds but elements. The main privilege of human beings, on the contrary to what majority of philosophers say, is not only the strength of Man's mind in abstracting and generalizing information, but also being aware of these concepts.

Tabatabaei (1953) puts forward another point about cause-effect relationship and says that each object has a subject or each effect needs a cause. The existence of any phenomenon which needs cause will not be attainable without subjective cause, even if, it has other kinds of causes (ultimate cause, material cause, and final cause). The subjective cause without an ultimate cause potentially is a subject; it is deficient and is not complete. Therefore, it will be the final subject with ultimate cause.

Tabatabaei (1953) tries to shed light to another property of the cause-effect relationship and says that two separate and independent causes cannot affect one effect, as one cause with one causal relationship cannot affect two effects. There are different interpretations in philosophy about these rules. Many examples in our everyday life show that several subjects cooperate to act as one activity, or one subject produces several activities. He argues that these few subjects function as one subject and one subject in different conditions is either several subjects or its several functions are in fact one activity.

Motahhari (1953) also pinpoints the arguments between materialists and theologians about the existence of cause-effect relationships and their beliefs about the existence of cause after the occurrence in the continued permanency of effect and argues that it is not accurate and scientific to prove continuum of effect without cause in some examples like: continuation of building after builder, child after parent, clock after factory. He believes that builder, parent, and factory are not the real causes. They are subjects that form the physical, chemical and vital circumstances by their activities. Therefore, they are causes of a series of systematic and regular activities. He says these kinds of examples have not anything to do with philosophy and should have scientific answers.

### Production Process Paradigm

The interactions between objects, events, and their properties are the major point in science of organization. In mechanical thinking, cause-effect was the central relationship by which all actions and interactions were explained. E. A. Singer Jr. (1959) noted that cause-effect was used in two different senses. First, it was used in the sense when a cause is necessary and sufficient condition for its effect. Second, it was also used when one thing was taken to be necessary but not sufficient for the other. For instance, an acorn is necessary but not sufficient for an oak; various soil and weather conditions are also necessary. Singer referred to this second type of cause-effect as producers-product. It has also been referred to science as probabilistic

or nondeterministic cause-effect. Because a producer is not sufficient for its product, other producers (co-producers) are also necessary.

Tracing the historical background of producers-product relationship, C. H. Waddington (1977) indicates that there are two great philosophical alternatives which are concerned with the somewhat intellectual picture we have of the world. One view is that the world essentially consists of "things" and the alternative is that the world consists of "process". He continues that these alternatives go back to the earliest Greek philosophers who lived before Socrates (about 600-500 BC). The "things" view is usually associated with the name of Democritus, and the "process" view with the name of Heraclitus. Democritus used the word "atom" for basic things, invisibly small unchangeable and unchanging little lump of something which could be called matter. Heraclitus argues that it is an essential feature of things that they are always in the process of change, like a flame into which burnable substances pass, are burnt, and hot gases come out. Heraclitus said that you can never step into the same river twice for the water is flowing, and when you step into it again tomorrow it will not be the same water as it was when you stepped in today.

There is another view which regards physico-chemical entities, as a source of knowledge for understanding the world and returning to Heraclitan "process" philosophy. This is opposed to Democritean "thing" view which anticipates Marx and Engels. Perhaps they were the first influential exponents of approaching to this kind. They tried to substitute a dialectical materialism for the current mechanical materialism. As in a similar line of thought more thoroughly, and more in relation to the natural world as a whole and our knowledge of it, Waddington (1977) adds, A. N. Whitehead (1923) points to a new determination of knowledge and argues that the foundation of knowledge is not the atom, as chemists describe it, or whatever fundamental particles the most recent physicists are willing to admit. Instead, science is based on observations, which made in a controlled and organized way, amount to experiment. Now an observation, or an experiment, has to be observed by someone. It is "an occasion of experience"; and involves the experiencing person as well as what is experienced. Thus, phenomena like mind or conscious perception are included in the very foundation of knowledge.

Conceding this introductory, it is possible to open out a "space" between the territories of cause and effect. Into this opened out space can be fitted a sense of intention where goals (or ultimate causes) become mediated through this space into objects or typologies (the formal cause). By this means, it is possible to see a process orientated temporal element similar to the process of becoming seen in the "soft" sciences of chemistry or biology. This temporality which contains the creative process of becoming quite literally splits the territories of cause and effect. Production process plays this role by its four stages:

1. Ultimate, final cause (purposes and needs);

- 2. Subjective cause (experts and disciplines);
- 3. Objective cause/effect (circumstances and conditions); and
- 4. Formal externalized cause/effect (product).

- end  
Each goal/need requires some resources to be changed by an expert into a new product. For instance, in designing or building a house (formal externalized cause/effect), an architect or a builder (subjective cause), designs or changes the circumstances (objective cause/effect), according to the user's needs or desires (ultimate, final cause). Therefore:

1. *Ultimate, final cause*, involves goals; different conceptual aspects; hierarchy of priority and dynamism in needs (cognitive and aesthetic needs, self-actualization needs, esteem needs, belonging and love needs, safety needs, physiological needs); and values;
2. *Subjective cause*, involves different disciplines, rules, and concepts which synthesize different ideas and solutions into coherent schemes, designs, and plans. The subjective cause has the power of creating new concepts which are applicable in the level of objective cause. Subjective cause works as a bridge between subject and object. It is the last stage of mental process in human activities which causes productivity;
3. *Objective cause/effect*, shows a level which consists of all kinds of objects, e.g. time, energy, technology, labor power, ecology, natural resources, nature, artificiality, and the other kinds of resources and circumstances which are either the means or the ends of other processes participating the main process; and
4. *Formal cause/effect*, shows end of the process where performance of a system is obtainable. This product might be either visible or invisible, material or nonmaterial, essential or nonessential, pure or descriptive, and etc.

The last stage or half cycle of the production process is on a synchronous level and is in charge for new generation of typologies chronologically. Formal cause/effect is also the means for the evaluation of any kind of human behavior. It is also the point which makes communication of the purposeful systems possible. Although, a product cannot be the cause of other products directly but it is potentially "cause" of their causes, i.e. it is indirect and secondary cause in synchronous dimension which stimulates cause of generating new products.

Each cycle of production process involves time. Therefore, in figure two, on (t1), after clarifying the needs, an order starts the process. Then an expert with a concept ladders down the steps of the process and changes environment in order to obtain responses or solutions. Then, this product ladders up, stage by stage, to evaluate the process (feedback control) so that to satisfy the causation of that ordeordancer which may have been changed during the process (t2). In this process, new creation in layer (4) will be examined for its capability of adaptation to the previous environment in the layer (3), for its quality in the layer (2), and for its utility in the layer (1). There are different kinds of evaluative influences embedded in each cycle of production process from start point up to the end.

Any ordinance pushes some activities towards producing the products and demand for them pulls the results towards a point to be tested and qualified. We may develop these two directions, which follow each other, as a cycle. For example, in some researches, we theevaluate evaluationof the reality is analytically to prove our hypothesis, which has been achieved synthetically, and to change it into a thesis. This scientific notion should be applicable in the half of the cycle, down towards reality. The experience of this process, which involves Man's role of evaluation and judgment, brings him/her evolution of mind and creative power. Knowledge of these experiences remains in Man's memory either as thesis, hypothesis or model. It will also actin our society as cultural values that protect and supportits transformation into a better civilization (Figure 3).

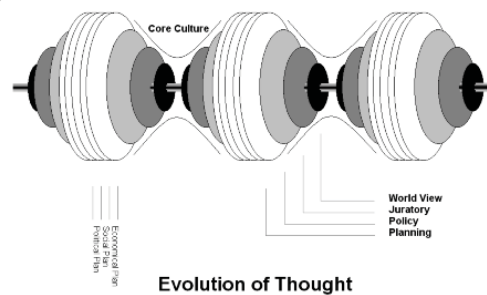


Fig 3: Hierarchical order of transforming culture into civilization, from depth into surface

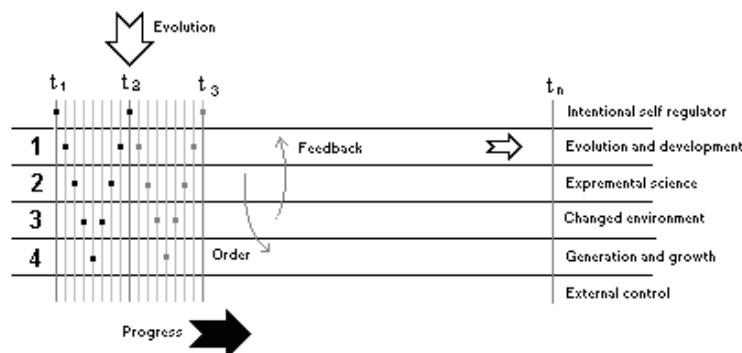


Fig 2: Production process relationship in diachronous time-space dimension



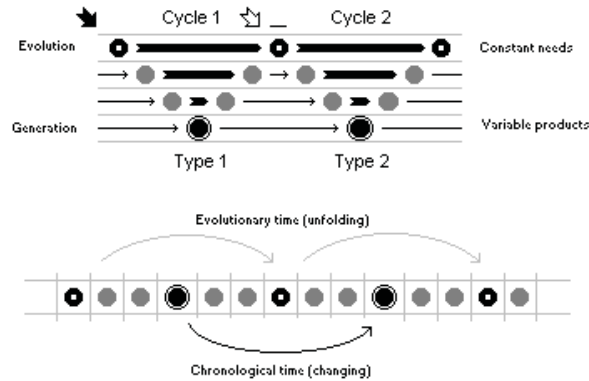


Fig 4: Evolution of mind, generation of types and deterministic cycles

Each product represents a synchronous frozen slice of time until one’s intention or purpose makes another decision to activate the process again. In fact, generation of products relies on the function of production process. This progress is consequence of changes of typologies in synchronous dimension which brings diversity of products. The application of each concept is as important as the feedback process for testing the product as a result. This evaluation accommodates knowledge which is one of the main resources for the evolution of the human mind and the structure of his/her society. Furthermore, it is also necessary to start another cycle of the process to generate a new product which can be more sophisticated and finalized than the previous one. If we define one of these cycles, as is shown in figure four, we may find new entities of this procedure in the model which will also help us to define the meaning of time and transformation.

Many argue that the process of achieving a self-sufficient community is very difficult in today’s complex world of

business and industrial organization. This argument seems to be true, because we think that the paradigm of production process has been reversed since some have began begun to benefit from exchanging products in a system or between two systems. These characters interfere in the hierarchy of the production process by providing commodities. In this scenario, it is the products, produced by institutionalized producers, have a central role and the needs of previous producers, which were the main goal, stand in the periphery (Figure 5). This model shows that peripheral individuals or societies are consumers and they only have the choice of choosing the opportunities that the minorities have created for them. Co-producers do not have the right to affect the production process which has been centralized. In these types of organizations, there is diversity disparity in the production processes but sameness uniformity in the products.

The model in figure five also shows that because people have to do certain jobs to earn money to improve the standard of their livings, they will gradually lose their creative power and their knowledge of consciously controlling handling their needs. They are not informed of all life’s processes and they are losing their skills in some aspects of their lives but will gain specific information about certain areas in their jobs. Therefore, they are losing their ability to manage their environment and have to accept outside policies.

We are still witnessing some communal activities in independent and self-sufficient societies within which we may distinguish nonessential properties as sectors (agriculture, industry, and services) and their interactions. The network of their relationships is created justified by the second paradigm of Endogenous Development Model, i.e. the “supply-demand” relationship in the lateral organizations of indigenous societies. The supply-demand relationship has is the cause of many activities, mostly in service sectors (business, health, education and etc.), or it has changes them considerably. This paradigm is the main root theme of inmany societies and forms the hierarchy of such organizations. The supply-demand relationship can

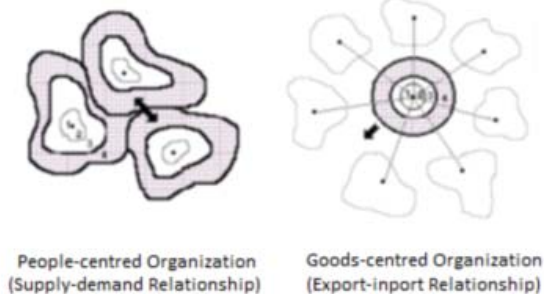


Fig 5: Mutual exchange of self-sufficient regions and dependent one directional relationship between center and periphery in goods-centered organizations



Fig 6: Complexity of supply-demand relationship in synchronous dimension

also be the secondary cause in forming a new generation of typologies in the synchronous dimension. The supply-demand relationship is the interrelation between the ends of different processes.

For a better explanation of this we can look at an example illustrated in figure six, to show the relationship between agriculture and industry. Agriculture demands equipment from industry, yet it might get a positive or a negative response. Likewise, industry might also have negative or positive answers for this demand. It is possible to consider four states for this relationship. Therefore, each sector has four alternative states in each relationship with the others. It may demand or supply and may receive negative or positive responses. For instance, in the agriculture sector we may face the situation that other sectors can or cannot satisfy its demands. Also, this sector may or may not satisfy the demands made by the others. Consequently, agriculture, industry, and the services should satisfy each other in a self-sufficient domain, otherwise, there is a need for “export-import” relationship, i.e. exporting the extra products to the outside the self-sufficient domain and importing the products, which are not available inside the domain. Export-import relationship is a manifestation of supply-demand relationship which occurs between two complicated

complex systems (societies). Following the analysis will lead to a sophisticated matrix capable of showing the synchronous relational network of all Man’s activities. The matrix is a way which makes it easy to get a general grasp of how the whole activities can be put together.

The interaction between these three sectors, considering the supply-demand relationship, will also create three-dimensional model of information, as it is shown in figure seven. This model works like an open-ended chain of information which is produced by each sector and shows the relation of each sector statistically. We can interpret from the model that each product is concerning at least two relations; one production process which shows its causation and the second is the network of interaction between the other products in the synchronous dimension. Although, in reality, it is not possible to separate sectors from each other, but, non-essentially, each sector has its identity in the middle of the square model and the other four surrounding units show the relation between the sectors. If one tries to overlap the similar units, then we he or shewill have a three-dimensional model which shows the complexity of the relations in synchronous domain.

### CONCLUSION

In conclusion, it is necessary to emphasize that if we are to design and improve the quality of life and to develop our societies, we must make it clear how the state of our affairs differs from that of earlier societies. Because of an increasing rate of technological change, social and environmental crises are generated and come to a head more rapidly today than at any time, especially in industrial countries and modern societies. Therefore, the key point is that development is not a matter of earning but a matter of learning. Learning how to develop requires trying until success is achieved. The role of development programs should give people an opportunity to learn by practice and to develop them from within.

The endogenous concept is directed at society’s development, not just its economic growth, but the authors do not preclude the possibility of the desirability of such growth. They view the reduction of the problems in an endogenous development more as a way of improving the quality of life than of increasing the standard of living. Endogenous development, as this research

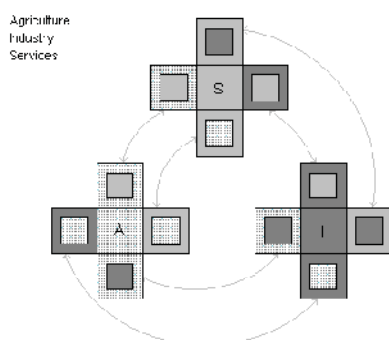


Fig 7: The squares units in the middle(e.g. A, S, I) show the essential part of each sector and the rest illustrate are showing the interaction between them

conceives it, is a psychological and a social concept. It is with respect to people's potential contribution to development for revitalizing their societies and economies which should be evaluated through the processes of "people-centered" production in a lateral organization. On the other hand, in a "goods-centered" production with a vertical organization the knowledge and the experience of the production are centralized and monopolized in a few institutions.

Furthermore, the distinction between South and North does not exist in the lateral people-centered organization. The scenario of South versus North is more suited to the goods-centered international organization. Such international organizations focus the creative impetus into the center. The inevitable consequence is the generation of typologies of goods and intellectual researches to perform progression rather than development.

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