# CHAPTER II

## LITERATURE REVIEW

This chapter reviews work on dynamism of local knowledge, agrarian transformation and natural resource management. These are the three main issues used in the conduct of this thesis and also three main concepts relevant to this study. Before go deeper in review of these concepts it is worth while look at the current studies on Muong ethnic groups.

Research on ethnic minority groups in Vietnam has bloomed in recent decades. Compared to other ethnic minority groups such as Tai, Dao, Jarai, Ede, Mnong the Muong had little study on them. However, Muong ethnic minority group was paid special attention by a French scholar- Jeanne Cusinier. She made first publication about the Muong in 1948. She had studied the human geography and sociology of the Muong. In her book, the society of the Muong with its culture, economy and society were described clearly and lively. Her book was translated into Vietnamese in 1996. However, due to the limitd of time, and the historical context and language the research bias toward the point of view of the upper class in Muong society are unavoidable in her book. Despite this, her study was valuable research on the Muong peoples.

Vietnamese scholars have recently started to pay more attention to the Muong peoples. Traditional land tenure, design in custom, cosmology and cultural characteristics of the Muong peoples are revealed meticulously in the research of Tran Tu (1996). He makes many new discoveries about Muong people and the Dong Son culture, which is considered as the primitive forbear of Muong and Viet culture. His research on the Muong is considered some of the richest done by the Vietnamese researchers.

The Muong language is paid special attention by two linguists Duong (1996) and Tai 1983). These authors focused on the relationship between the Muong language and Viet language. They have both created valuable documents for understanding the historical background of the Muong people and the relationship between Muong and Viet people. Other native Muong authors (Thien 1976; An 1999) have concentrated on collecting myth stories, and funeral songs, describing the life and culture of the Muong in their traditional cultural context and raising the questions about how to conserve their traditional culture. Some other researchers focus on the impacts of dam construction on Muong peoples(Hirsch 1998). All of this research is a valuable base from which to understand the society of Muong peoples. However, the ecological knowledge as a part of their culture has not been paid enough attention. Therefore, this research aims to contribute to an understudied aspect of the life of the Muong people.

## 2.1 Dynamism of Local Knowledge

The question of how people perceive nature and society and how people build their knowledge has long been a central concern of the social sciences. Classical scholars consider the relationship between knowledge and reality as the fundamental of social sciences. These scholars give different notions of knowledge and knowledge construction, its roles as well as its relationship to social phenomena in human lives. Concepts of knowledge are various, changing and often link to study about language, culture, ideology, power and discourse. In general sense, knowledge is product of human beings. Knowledge is what people perceive, know and believe. It is not something that already exists but rather something human beings have to work for. Knowledge reflects the worldview of human about nature and society. People not only relate to nature but also interact with each others as a society. Therefore knowledge not only reflects the perception of people about nature but also about society, which contains many different social relations. In other words, knowledge is developed in a living interaction process between humans and nature and among humans. In modern times scientific knowledge has dominated our world.

It says that there is only one kind of knowledge and that is science. However, in recent decades actual evidences have prove that there are more than one kind of knowledge and that no form of knowledge is superior to others. Besides scientific knowledge there are many other kinds of knowledge remained by local peoples. There is a diversity of knowledge and therefore diversity of culture.

Local knowledge, broadly speaking, is the knowledge used by local people to make a living in a particular environment. Derived from many years of experience and accumulated from generation to generation, this knowledge reflects local people's perception of the natural landscape and environment. This knowledge is seen as a form of traditional culture. Local knowledge is characterized by various features but this does not mean that local knowledge is pure and static. Instead local knowledge must be understood in dynamic terms. Scientists use different terms to talk about local knowledge. The term "local knowledge" is used interchangeably with "indigenous knowledge", "indigenous ecological knowledge", "traditional knowledge", "ethnoscience", and "rural people's knowledge"and other terms, even though among these terms some differences exist.

The popular trends in current studies of local knowledge advocates the roles of local knowledge in the "ecological crisis"viewpoint which sees human activities as heading for a collision with nature. Chaperkie (1996) sees local ecological knowledge as "resource management" practices of indigenous peoples in the links between indigenous peoples, cultural diversity and biodiversity. He focuses his attention on the relationship between peoples and landscapes, knowledge and locality. He rises the need to understand the "cultural context" (1996:230) in which indigenous knowledge has arisen. He refers local knowledge to the same grounding of cultural diversity in locality and its connections with biological diversity. He means by that just as nature is not homogenous, knowledge is not homogenous. He talks of local knowledge by reflecting the range of observations, information and interpretations made by local peoples, communities and individuals. He also recognizes that knowledge is cerebral activity bound up in practical activities,

particularly indigenous technological systems and both collective and personal experience, based on long - term observation. This idea of Chaperkie is repeated by the work of one of his colleges - Foller. Foller (1996) bases his look at the consequences for the livelihood of indigenous peoples of the current globalization process on an anthropology of knowledge. He focuses on the loss of local knowledge. For him, knowledge is created by human beings and therefore is a part of their culture. He assumes that all knowledge is in some sense local knowledge, although when he refers local knowledge he is mostly talking about indigenous peoples' knowledge. He finds the visible forms of local knowledge in production activities such as agriculture, hunting, gathering and ethnomedical practices. At the same time he recognizes the invisible forms of local knowledge such as cosmology, myths and other narratives. He emphasizes the process of construction of knowledge by indigenous peoples through learning practical experiences and living closed to nature for centuries. He gives many evidences to prove that local knowledge is not backward and irrational. In many cases local knowledge sees and understands things which outsiders miss but indigenous peoples experience. For him, the ways local peoples perceive, utilize and manage resources is a development of technology, knowledge and competence which has been crucial for the survival of indigenous culture.

Studies on local knowledge have also focussed on discussing the relationship between local knowledge and Western or scientific knowledge. Many scholars pay attention to the characteristics of local knowledge in comparison to scientific or Western knowledge. Barsh (1996) used term "traditional ecological knowledge" to argue that the knowledge of indigenous and tribal peoples is scientific in that it is empirical, experimental, and systematic. He differentiates traditional ecological knowledge and Western science in two respects. First traditional ecological knowledge is highly localized. It focuses on the complex web of relationship between humans, plants, natural forces, spirits, and forms within a particular locality or territory. Second, the localization of traditional ecological knowledge has important social and legal dimensions. It can be conceptualized as a web of social

relationships between a people in a specific group of people and other species with which they share a particular place.

Thompson and Scoones (1994) use the term "rural people's knowledge" in their analysis of agricultural research, and extension practice. They point out that rural people's knowledge is always fragmentary, partial, and provisional on nature. It is never fully unified or integrated in terms of an underlying cultural logic or system of classification. Moreover, knowledge is embedded in diverse cultural, economic, environmental, and sociopolitical institutions that intersect and influence one another. For Thompson and Scoones, knowledge, whether indigenous or scientific, is inclusive in the sense that it is the result of a great deal of decision-making and selection of previous beliefs, values, ideas, and images, but at the same time exclusive because it excludes possible frames of conceptualization and understanding. Hence knowledge is not an accumulation of "facts" but involves ways of comprehending the world: knowledge is always in the making. According to Thompson and Scoones, farmer's knowledge includes farming experimentation and practices. The farmer experiments can be identified as experiments of curiosity, adaptation, problem - solving, or peer pressure experiments. Various forms of investigative processes are used, from deductive hypothesis testing to inductive analysis. In each case interpretation is influenced by the social and economic context.

In a word, rural people's knowledge, in the study of Thompson and Scoones, is characterized as highly specific and particular, emerging from localized, practical experience. This characterization can be contrasted with agricultural science, which is seen as theoretically based, providing objectives, genereliable knowledge. Rural people's knowledge thus has the potential appropriate for slow adaptation to technologies, while agricultural science is regarded as superior at technological innovation and working on a wider scale. However, this generalized contrast between rural people's knowledge and agricultural science is inadequate. Both rural

people's knowledge and agricultural science proceed with determined context, reinforced by continuous interactions between theory and practice.

Opposite to Brash, Thompson and Scoones other scholars such as Agrawal (1995), and Chapeskie (1996) critique the distinction between indigenous knowledge and Western or scientific knowledge. Agrawal examines the significance of indigenous knowledge for development. According to Agrawal, indigenous knowledge not only encompasses technical but also "non-technical" insights, such as wisdom, ideas, perceptions and innovative capabilities. He suggests that there is the contact, diversity, exchange, communication, learning and transformation among different systems of knowledge and beliefs. Agrawal critiqued the idea that science is open, systematic, objective and analytical while indigenous knowledge is closed, non-systematic and holistic. Agrawal says that the claim that indigenous knowledge is often seen to exist in a local context, anchored in a particular social group in a particular setting at a particular time while Western knowledge, on the other hand, has universal validity, does not make sense. Thus attempts to introduce technical solution-oriented development policies are structurally biased to ignore the social-political and cultural contexts and therefore fail when it implemented.

In general, Agrawal does not agree with the ideas of separating indigenous knowledge and scientific knowledge. Instead he suggests the existence of diversity within both. Therefore, it is necessary to accept differences within both these kinds of knowledge and find the similarities across them. In this sense, I agree with Agrawal. We should not see indigenous knowledge as something closed, static and unchanging. Furthermore, local knowledge as well as other kind of knowledge is always in the process of receiving influences from the outside. We should understand the diversity of many kinds of knowledge in the sense that they are interrelated to each other.

Thrupp (1989) analyses the socio-political, institutional, and ethical issues in understanding local knowledge systems. According to Thrupp knowledge, practices,

and beliefs of poor rural farming peoples in developing countries can be termed "local knowledge", "indigenous skill", "traditional knowledge" or "ethnoscience". He uses the term "local knowledge" in his work. He critiques those Western scientists who characterize farmers' traditions as backward, conservative, inefficient, inferior, and based on "ignorance" or myths. Thrupp argues that the farmers' ignorance about new or western technologies is not a matter of "stupidity" but is largely a manifestation of poverty, social inequities, and inaccessibility to technical resources. In many cases, new methods are not adopted because they are unsuited to the environments and resource of poor farmers. Moreover, "conservative" or "backward" practices are often rational responses to local conditions and are logical adaptations to environmental change. For Thrupp, the knowledge of local peoples is not a static body of wisdom, but instead, consists of dynamic insights and techniques that change over time through experimental adaptations to environmental and socio-economic changes. According to Thrupp, peoples' knowledge is shaped by the political economic context of their society. In modern times, it has become increasingly rare to find a group or tribe that ia completely isolated or cut off from the market economy and from Western culture. Local knowledge thus becomes modified and mixed with "external" ideas and technologies when the nature of socio-economic and technical conditions transformed.

We can see that local knowledge from Thrupp's perspective is dynamic, diverse, open and includes both technical and non-technical aspects. He highlights the experimental adaptability of local knowledge to environmental and socio-economic change. This idea of Thrupp will be applied in my research. I will also study local knowledge in relation to scientific knowledge and socio-political and environmental conditions.

Chambers (1983) points out some problems of such terms as "people's science", "ethnociences", "indigenous knowledge", and "local knowledge" also. He uses the term "rural people's knowledge" in his work to refer to "the whole system of

knowledge, including concepts, beliefs and perceptions, the stock of factual knowledge, and the processes whereby it is acquired" (1983:83). He analyzes why development projects from the outside fail and explains the root causes of those failures have. These projects fail because they are too polarized: concentration on scientific knowledge more than rural people's knowledge, research more than practice, chemical more than organic, man more than woman, etc. He explored four aspects of rural people's knowledge. These are farming practices, knowledge of the environment, rural people's faculties, and rural people's experiments. His general ideas advocate for rural peoples and raise the importance of rural people's knowledge in development projects. He provided the in-depth studies on farmer's knowledge.

Rambo (1995) uses interchangeable terms such as "indigenous knowledge", "local knowledge", and "farmer knowledge" to indicate that local knowledge is different from scientific knowledge. Local knowledge is based on "*ad hoc*" trial and error learning rather than systematic experimental testing of comprehensive theories. Local knowledge is most useful for identifying the problems and constrains effecting resource management. Local knowledge is also valuable as a source of information about long-term trends and rare and unusual events that may not occur during the short periods. For Rambo, the farmer's knowledge of causality is often difficult to assimilate to a scientific perspective, because their knowledge originates from beliefs in supernatural spirits. More than that, farmers are not lacking the appropriate technologies to perceive the ecosystem, even they do not know the scientific words. They understand the situation and explain it in their own words without understanding why it happens. Rambo displays the process farmer use to construct knowledge. He emphasizes the process of learning by doing through the practical experiences of the farmers. It is obvious that farmers are different from scientists because their way of knowing is different. This difference does not mean that farmers are backward but that their knowledge is appropriate to their context.

Conventionally, the study of local knowledge is linked to the development process and the relationship of power and discourse. There are many authors focusing on how local knowledge is treated in development. Hobart (1993) uses the term "growth of ignorance" to strongly critique the implementation of scientific knowledge in development processes in Third World countries. He calls development as a "big business" that benefits western industries and the part of Third World governments that receive aid and loans from development agencies. He analyzes power relations between developers and those to be developed. He points out that: "the absence in most public discussion of development are the ways in which the knowledge of peoples being developed are ignored or treated as mere obstacles to rational progress" (Hobart 1993:2). He considers the aims of development to be the same as for modernization, that is the transformation of traditional societies into modern ones. The means to this transformation is scientific knowledge that requires homogenization and ignores differences. He adopts the idea of Micheal Foucault about discourse being classified into three kinds and uses the discourse of developers, developed people and government as the center for his argument about how knowledge, power and agency are represented in different situations. The importance of the idead of Hobart and his colleagues is the treating of "local knowledge as practice, situated activity, constituted by a past but changing, history of practices" (1993:17). Furthermore they use post-structuralism to understand how local knowledge is constituted and works as practices. Hobart quotes the ideas of Clifford Geertz (1983) that "local knowledge (is) local not just as to place, time, class and variety of issue, but as to accent-vernacular characterizations of what happens connected to vernacular imaginings of what can". This means that local knowledge must be understood contextually in terms of ideas and beliefs in the culture.

To summarize, the ideas of Hobart and his colleagues give us an alternative way to look at local knowledge. Their cental idea critiques the shortcomings of development theories and shows that local knowledge is not static, homogenous but dynamic and diverse. It is necessary to consider local knowledge as social practices.

At the same time Hobart raises the need for understanding local knowledge in different contexts. I adopt the ideas of Hobart in my research to study the dynamics of local knowledge of Muong peoples in relation to scientific knowledge and the impacts of market forces, the Green Revolution and State policy in the context of agrarian transformation in Vietnam.

Nygren (1999) critiques various approaches representing local knowledge whether as obstacles to development or as a panacea for sustainable development. He analyzes the role of local knowledge in the current debate on environment and development discourse by arguing against ideas of fixed boundaries and static opposition between rational and practical, traditional and modern, local and universal in the understanding of local knowledge and scientific knowledge. Instead, he establishes more diversified models to analyze the relationships within heterogeneous knowledge. He focuses on the articulation of knowledge repertoires by viewing local knowledge as a process of social negotiation involving multiple actors and complex power relations. He indicates situated knowledge as an approach that mends the dichotomy between scientific knowledge and local knowledge. Situated knowledge by his terms is the process of contesting and reinterpreting knowledge by diverse social actors. This interpretation is interaction of multiple social actors that are differentially empowered. Simultaneously, the representations of heterogeneous local knowledge also are based on age, class, religion, social position, personal experience and gender. Situated knowledge is also closely linked to the complex social history, composed by dynamic articulations between various knowledge systems.

It is clear that Nygren not only understood the dynamism and diversity of local knowledge but also viewed local knowledge as a continuous process of change, negotiation, contestation and coexistence, in which traditionality and modernity, situationality and hybridity, local and global were mingled together to create a complicated local life. He provided a wholistic way of viewing local knowledge. This idea has been a guideline to my research on local knowledge.

We can see that the main issues in current studies on local knowledge are as following. First, a discussion of the characteristics of local knowledge and the process of construction local knowledge. Second, a discourse on the relationship between local knowledge and scientific knowledge. Third, a discussion on the roles of local knowledge in the development process.

In this research, I do not differentiate among the various terms for local knowledge. Instead I use the term "local ecological knowledge" to indicate a system of practical "resource management" knowledge developed in and appropriate to a particular locality or ecosystem. This definition reflects a complex, dynamic relationship between local people and the environment. I emphasize the social process of knowledge construction and the dynamism and diversity of local ecological knowledge. I consider the dynamism of local ecological knowledge as the potential of various knowledge systems to modify, penetrate, connect and coexist of in a dialectical relationship with social and natural conditions. This potential is the continuous process of synthesis of the experiences of local farmers.

This study on the dynamism of local ecological knowledge will avoid the essentialist perspective on local knowledge that defines local knowledge as practical, irrational, myth, magic, particular and lacking the will to change, in juxtaposition with scientific knowledge which is theoretical, rational, logical, and universal. In my view, the essentialist vision does not reach the social process of knowledge construction and tries to separate the two kinds of knowledge. This vision also ignores the actual dynamism and complexity of local knowledge. In reality, all knowledge is a social process. Knowledge is constructed of diverse elements and combined within a world of multiple actors. Any attempt to draw boundaries between two kinds of knowledge will be useless because knowledge as well as culture or way of life, is always affected by the interaction and influences from other different systems in the same locality. To think of local ecological knowledge as "dynamism" is to recognize the fluid, flexible diversity of knowledge and culture. In any given time and place, under the influence of socio-political and

natural conditions, and the affect of other systems of knowledge, local knowledge is open to receive the affect from outside. There is a potential for local knowledge to coexists together with scientific knowledge in so far it is a process of responding, negotiating, contesting and modifying to adapt to the needs of life. I also consider the dynamic of local ecological knowledge as the continuous process of transformation, which occurs historically. I view this as a process of periodic breaks, interruptions and reorganization, in which local ecological knowledge is reordered, rearranged, and repositioned, so as to provide new forms of knowledge practices to articulate new historical realities. In order to understand the dynamism of local knowledge, I emphasize social and natural environmental change in agrarian transformation as the context of knowledge changing process. Through this process, local ecological knowledge is shifted or transformed so as constitute new systems of meaning. Through this process, scientific knowledge also intervenes or penetrates into local knowledge so it can be presented under new realities. The dynamism of local ecological knowledge happens in the development context as a way of expressing the adaptation of knowledge to natural and social environmental change.

### 2.2 Agrarian Transformation

Agrarian transformation and its important features is understood in various ways due to different points of view, and periods of time, as well as the context of each society. Agrarian transformation usually relates to the discourse of social differentiation and power struggle. Agrarian transformation brings change to rural society and thus to local knowledge because local knowledge is constructed from practical experiences and always affected by the social and natural environment. Once changes in natural and socio-economic conditions cause to changes local knowledge. The term "agrarian transformation" is defined variously. There are many scholars who have studied peasant society they did not assume that peasant society was static social structure but believed it was dynamic and changeable over the time. (Shanin 1990: 3, 28-31; Rosen 1975:10) The term "agrarian transformation" is used to describe the process of change in rural society but it does not mean a single

change and unilinear process leading to a determinate outcome. Agrarian transformation should be seen as a multidimensional process that involves many socio- economic and political aspects with various contents and forms.

Kerkvliet and Dong (1996) use the term "rural transformation" in their research on rural areas of Vietnam. For them, transformation is not simply about changes in agricultural production or shifts in the distribution of resources and population, but includes issues of wealth distribution, social justice, the fiscal capacity of rural institutions for governance, health, education, agricultural extension, and rural credit. These authors analyzed rural transformation in the context of economic liberalization and in relation to rural development.

To explain the main sources of rural change in the process of agrarian transformation, state, market forces, and technology were considered as factors connected to this process. Among these factors, the state was considered the strongest one. Hart (1989) focuses on effect of state on agrarian transformation and rural differentiation. For Hart, state patronage is central to understanding the agrarian transformation processes. State patronage not only influences forms of extraction and accumulation, but also generates tensions and contradictions that constitute important sources of change and differentiation. She argues that: "state patronage contains the seeds of its own destruction and is likely over the long run to generate new threats to the structure of state power and hence new strategies of state intervention" (Hart 1989:32).

In general, Hart defines agrarian transformation as a dialectical processes. She emphasized the crucial role of state in unproductive investment and labor control. She also makes a historically specific analysis of the exercise of power at different levels of society which enhances the understanding of rural differentiation. Furthermore, she points out the roles of the rural elite as agents of the state at the local level as well as in the influence of political and economic forces.

Turton studies state power in the rice sector of agriculture in Thai society. He analyzes the political aspects of government policies toward agriculture. He postulates that government policies including legislation, land taxation and capital expenditure contributed heavily to the enormous increase which is planted area of rice, most of wet rice and monocropping development. He believes this policy favored urban and industrial development, the accumulation of capital outside the rural sector, and integration of the Thai economy into the world economic system. He shows how government investment was distributed unequally and mostly spent fertilizer, credit, and irrigation systems, which benefited better – off producers and wealthier farmers. Turton says that this leads to "increased inequalities of income and unequal access to means of production (especially in favored regions where capitalist development in agriculture is more advanced), access to employment, and indeed access to virtually every all social benefits, including health and education" (Turton 1989: 65). At the same time, he investigates the role of local power in increasing state penetration into the village political and administrative process under the category of development. The so-called local power, as he refers, is located empirically within villages, within district and higher level towns and centers. Local power also is located and within agricultural, bureaucratic, and commercial spheres and institutions. Turton emphasizes the class relations to state power. For him, the state affects on differentiaties agriculture into two sectors. On the one hand, agrobussiness and large-scale farming using modern technology are favored; on the other hand, the state puts more attention on 'poverty eradication' and 'job creation' programs. A minority of producers is left out of these two sectors (Turton 1989:74). To summarize, Turton emphasizes the exercise of power at different levels of society and addresses power relations, which involves state, local government and farmers in agrarian transformation. He specially focuses on local power and its linkages with the state. Simultaneously, he also pays attention to state intervention which changes rural society and differentiates rural peoples into different classes.

In the process of agrarian transformation, the market economy with its modern technology is considered the main element effecting peasant society. The concept of technology normally denotes the means of production, a crucial economic factor, together with land, labor and capital by which the population controls, modifies and appropriates environmental resources. In agriculture, technology represents all the things used in exploiting environmental resources, along with tools and equipment of production involved, which are often defined as non-land capital.

When studying the transference of technology to farming systems in Thailand, Tanabe (1994: ix, 1-21) explains the way in which the peasantry in Thailand interact with their environment by examining the fundamental basis of their production process and their social setting. For him, the problems which go along with the economic growth and building of an industrial nation-state in Thailand have been hidden by the rapidly changing process of development and its associated discourse. The causes of problems of environmental degradation are not only in on-going capitalist development, but moreover in the intrinsic relationships between persons and environments which are determined by social relations. Based on the discourse about the relationship between people and environment, he argues that the perspective which sees the environment as an outside force or field to be attacked, conquered and domesticate by establishing towns and buildings is associated with modern scientific knowledge and the technology transference. He considers the transferrence of modern agricultural technology as the transmission of scientific knowledge, which is often mediated by prescriptions, emphasizing causal effects of external inputs, as working against the existing environmental relations. This causes increased dependence on tools, machinery and other industrial inputs, and these technologies replace the sustained mutual interactions between people and the environment. Thus he investigated the association of local knowledge and practices through the way in which, the farmers knew about and acted on a particular physical environment, and managed to cope with existing social and economic relations in order to sustain themselves.

Wong (1987) studies the changing of peasant society to commodity society under the impact of the Green Revolution in Malaysia. Wong considers the process of change at the village level in the wake of the technological and social innovations induced by the "Green Revolution" such as the transformation of agrarian structures as a result of the penetration of capitalism into agriculture. She critiques the Green Revolution saying it favors the "progressive" farmers or well-to-do farmer who mostly like to accept new technological innovations. In other words, the bigger farmers benefit, but the poor are increasingly marginalized. The Green Revolution brings polarization and impoverishment effects. At the same time, the Green Revolution introduces new varieties or double-cropping so which lead to a higher demand of wage, so labor power becomes a commodity. Another affect of the Green Revolution is the change in the agrarian structure in which land ownership more and more belongs to the large farmers at the top. In fact the Green Revolution differentiates peasant society into two tiers: the large rich, and the poor small farmers in which the number of the rich decrease but they occupy most of the land and capital. In contrast, the number of poor has increased but they control a very small amount of land and capital. In short, the Green Revolution benefits the large owners at the expense of the small and poor tenants. The Green revolution lead to a process of transformation of the agrarian economy in which the subsistence-oriented peasant economy has shifted to capitalist-organized commercial agriculture.

The study of Rosen (1975: 5-19) shows change in peasant society in Southeast Asia and India in conditions of economic development. He assumes that changes in rural population, weather and disease and the influence of colonial powers are the root causes of changes in peasant society. Population growth affects to economy of families and led to conflict for power among male heirs. Weather was the main influence on crop production. Disease was a major factor in the level of population. Colonial power with foreign trade and colonial rules had a profound influence on peasant society. Thus, different from other authors, Rosen saw the changing in peasant society in developing countries not only at the national level but also in relation to the global context. From

economist's point of view, he recognized that peasant society with its subsistence and low output characteristics will confront the risks and high investment costs associated with new technologies for high yields.

Besides the influence of market forces and the state, for local peoples, the attraction of wealth, of the development of education and of health care services are quite different and new to them, bringing the change in their minds. Human beings are similar to each other in desiring a happy life. In reality, local peoples they themselves want to change to a better life. The modern society with industrial facilities, what they see in other "more developed" groups, make them think about their situation. All encourage them to question what they have. It is fair to say that both external and internal factors initiate changes in the mind of the local community and therefore changes in their society.

Although understandings of the agrarian transformation are different it is obvious that the agrarian transformation is not a unilinear process. It combines multidimensional processes and should be understood through a complex and diverse approach. It is considered that the transformation of local knowledge is a part of agrarian transformation because agrarian transformation is a sociological process that involves the rural or agricultural sectors, their populations, their societies and cultures. The outcomes of agrarian transformation are various and have both positive and negative aspects. One of the clearest consequences of agrarian transformation is that the rural community is differentiated into different groups with different political, socio-economic status and interests in the interrelationship among them.

Anan (1989) investigates changing labor relations and mechanisms of access to resources in a rice-growing area of a Thai village, under the introduction of triple-cropping and capital-intensive commercial production. He explores the complex variety of tired-labor arrangements and the tendency of a few landowners to become capitalist farmers and others, through loss of land and eviction from tenancies, to become entirely dependent on wage labor. He also analyzes the political context in which on one hand

wealthy and dominant villagers are supported by state policies and institutions whilst on the other hand the struggles and resistance of poorer farmers and laborers secure the conditions of their subsistence and livelihood. According to Anan, the introduction of intensive commercial production of rice and therefore the expansion of rice land grows increases the problems of many small landowners as them become tenants and a large number of households are faced with a crisis of subsistence. Because of their control of a large area of irrigated rice-land and also their broad local political connections and powers wealthy villagers who benefited the most from intensive commercial production from government policy, become capitalist farmers. In addition, the government policies, subsidized agricultural credit programs and rice support schemes seem to favor the rich and expense the poor farmers. Therefore, this led to agrarian conflicts between landlords and tenants. Simultaneously the introduction of triple-croping following improved water supply led to the development of complex tenure arrangements. A growing number of smallholders have been forced to become rural workers, with greater insecurity of subsistence because they have lost their own land. Large landowners have to rely on the employment of hired workers. Conflicts in relations between employer and laborers have become more evident and are increasingly coming to center on the issue of wages.

In short, Anan provides deep research on productive relations in agrarian transformation. He specially emphasizes labor and land, which are two important elements in the productive process. Class differentiation and conflict are analyzed through the complexity of property relations and different influences of state power on rural society. His study brought a dynamic understanding to agrarian transformation and social differentiation.

Agrarian transformation can be considered a popular tendency in most Third World countries at present. It refers to change in all aspects of rural society. It involves many socio-economic and political dimensions. In this research I consider agrarian transformation as a complex process of ecological, socioeconomic, political and cultural changes over a certain period of time, involving peasants, farmers, and their

agrarian communities. This transformation consists of not only desirable results but also a large number of unexpected, unplanned consequences. Agrarian transformation is a powerful trend even at the national and global levels. I found that what happened in Vietnam and in the Muong community was much similar to what scholars studied in other Southeast Asia countries although there are some different features because of different social and political domains. In this research, I refer agrarian transformation in the sense of qualitative change within the Muong community under influence of economic and political factors. By qualitative change here I mean the transformation from traditional subsistence society to modern society. First of all, I examine state power in development programs in detail. It is the strongest external factor affecting changing to the Muong community because in Vietnam, state claims democratic centralization of power in every matter. This is feature of the Vietnamese State different in comparison with other Southeast Asian states. In addition, I explore the penetration of market forces by commercialization and the influence of the Green Revolution in introducing of cash crops, modern technology and high yield varieties to traditional rural Muong society. Furthermore I will link the dynamism of local knowledge to the context of agrarian transformation and the intervention of outside factors, especially scientific knowledge and the development process. I also analyze different social actors by class, gender, age and social status in the Muong community to understand the heterogeneous diversity and complexity of local ecological knowledge.

### 2.3 Management of Natural Resources

Local ecological knowledge exists and develops in close relation to the capacities of local community and household in managing productive resources to meet their livelihood needs. Through the ways communities and households manage resources, their ecological knowledge becomes visible. Therefore dynamism of local ecological knowledge goes along with the changing forms of natural resources management under the affects of both internal and external factors.

Resource, especially natural resources, are defined differently according to time and perspective. The different connotations of "resource" express changing attitudes of human to nature and changing relationship between human and nature. According to Shiva (1993) resources used to be seen as gift of nature in pre-modern times, as input in industrialism and as substitutes in the period of abundant supply of technology and capital but scarcity of nonrenewable resources. However, in any period of time natural resources play the vital role in the existence and development of human beings, not only for present but also future generations. Resources, in this research include land and water, two crucial resources for livelihood of the Muong people in Mai village. Management of natural resources relates closely to the property regime. This study does not go deeply into research on different kinds of property regime over natural resources. Instead, this research discusses the management of natural resources at community and household level in the sense that management is the control, the decision and the choice of local peoples toward their resource scarcity. This reflects their local adaptability through which dynamism of local ecological knowledge is expressed.

There are various studies on management of natural resources. The most popular approach concentrates on the community level. Community-level approaches use different, interchangeable terms such as "community-based natural resource management" (CBNRM), "co-management", "cooperative management" and "community management" to refer to this kind of management. Fundamentally to this approach is a response to the limitations of the top-down, centralized, bureaucratic management of natural resources by state and government. At the same time this approach sees the potential of community-based institutions and local organizations to response and adapt more effectively to locally specific social and ecological conditions for sustainable resource management in the future. Local communities were also seen as more knowledgeable about local ecological processes and about locally effective management practices and better able to mobilize local resources through their traditional forms of access and management.

There are two main fields of inquiry in studies of community-based natural resources management. The first is discussion of what community is. This is a debate about the natural features of a community. Is a community made up of what are competing interest or shared common interest? Many ecologists have overemphasized the competition in ecological relationships. The emphasize the self-serving characteristics of individuals in a community. They predict that selfish individuals using a common resource pool will overconsume to the detriment of all. Competing interest is seen as the "tragedy of the common" in resource management (Hardin 1967). According to Korten (1986), community popularly implies a group of people with common interests. He follows an idea derived from the field of ecology, which emphasizes that any population of organisms (individuals) living in a common location must be in competition and therefore any population of humans living in a common location must similarly be in competition, including a population of humans living as a community together. It is clear that the root cause of this belief comes from the theories of Charles Darwin about "natural selection" and "survival of the fittest".

In recent decades, there has been another approach to the study of community in common resource management. It is the theory of cooperation in community. Berkes (1989) assumes that users in community are in cooperating and sharing common interests rather than competing to one another. He believes that "common property resource tragedies in the Hardin sense seem not to be the rule but the exception" (1989). He assumes that Western culture tends to overemphasize competition and underestimate cooperation and this ideology of competition may be brazing the worldview of scientists. Because this cooperation has received relatively little attention in the population ecology literature and in the past there has not been much interest on the cooperative use of common- property resources. He sees cooperation in a community expressed through helping behavior. Such behavior is promoted by kin selection, reciprocity and group selection. He believes that cooperation among users of a resource to achieve sustainable management is

possible. The cooperation and sharing common interests hold together an "imagined-community" (Anderson 1991).

Peluso(1996) provides a practical example about cooperation in community by introducing the term "ethic of access" to describethe property rights of forest-dwellers in West Kalimatan Indonesia. According to Peluso, access to resources of forest dwellers is often guided by an "ethnic of access", which may be unique to the specific resources. The ethnic of access is driven by more than economics or subsistence rights and serves social, political, and ritual purposes as well, such as representing kinship, power relations, ritual harmony. Resource access and control within the community are usually to two basis: kinship - the bilateral inheritance of rights to various resources-and the investment of labor in resource production or management by resource users. For example, participation in the harvest of most fruits and forest products is both a right by inheritance and a conveyor of rights by dint of labor investment.

Ireson (1995) shows that traditional villages in Laos managed water for their paddy fields based on reciprocal relations. Mutual assistance was organized among village households. In farming activities, labor exchange was common during periods of intensive work such as when the rice crop was transplanted or harvested. In these exchanges, a day's work is counted the same regardless of the task or whether it was done by a man or woman. If its adults are ill, a household can expect free assistance from its neighbors and kin to complete critical farming tasks, with no need to make an immediate return. Building a new house prompts an invitation to most, if not all, village households to assist in the first day's heavy work, and to share in a meal. Families who have experienced a poor harvest can borrow rice from other families without interest until the next harvest. Better-off families without enough workers may provide room and broard for youths from poorer families during the rice-growing season, and then send them home after harvest with hundreds of kilograms of rice for their families' use.

All views of community reviewed thus far have viewed communities as either competitive or cooperative unit. There is another approach. This sees community as a residential unit (Uphoff 1998). Community may be homogenous or heterogeneous, small or large. Community could be homogenous in terms of language, wealth, lineage, and other characteristics. Simultaneously, the same community could be heterogeneous both within and outside community in term of age, gender and personal experiences.

In my thinking, a community is composed of a group of social units, in which members can share or compete interests. They can share common cultural norms but compete with regard to economic interests. Consensus and conflicts exist at the same time within communities. The behavior of human being is flexible in responding appropriately to prevailing conditions in the social and physical environment. Thus depending on the situation, users in a community can be in competition or cooperation in management of natural resources. This reflects the complexity and dynamism of social relations in which the community is involved.

Although their understanding of community are different, community-based natural resource management approaches are concerned with community control and management of productive resources. Therefore the second area of study about community - based resource management is how to strengthen the potential of local community.

Uphoff (1998: 1) referred CBNRM as the "community having full and generally autonomous responsibility for the protection and use of natural resources". For him, CBNRM is more feasible and more desirable where the human populations and ecosystems are co-adapted and not under stress and where community is not confronted with new conditions or new pressures both from nature and policy. For Korten (1986: 3), "the performance of a CBNRM system is a function of its ability to mobilize available resources and to use them productively, equitably, and sustainably in meeting the needs of community members". Thus

Korten emphasizes the potential of community in the control of natural resources to meet their need. Every member develops systems or mechanisms by which its members access and use locally available resources to meet individual and collective needs. Brosius (1998) assumes that CBNRM is driven from three premises. First, local populations have a greater liability in the sustainable use of resources than do the state or distant corporate managers. Second, local communities are more cognizant of local ecological process and practices. Third, they are more able to effectively manage those resources through local or traditional forms of access.

It is clear that the CBNRM approach attempts to empower local institutions in their conflicts over managing natural resources with state, national and transnational agencies. However this approach also carries a number of constraints such as the impact of external political and economic structure on collective community interest, also the problem of competing and conflicting interests among individuals within and outside community. Therefore it is necessary to establish an appropriate balance of responsibilities among different actors and institutions based upon the specific social, ecological, political and local economic context.

Cultural dimensions of community are paid special attention to empower the potential local community in natural resource management and to balance the power of state. Anan (2000) studies the local control of land and forest management in Northern Thailand. He points out that in recent times in Thailand there have been two ways of seeing the cultural dimensions of natural resource management which he calls the "community culture approach" and the "community rights approach". He says the "community culture approach" is popular among Thai NGOs which conduct development projects at the local level. This approach defines culture not simply as a value system but more as wisdom and a mode of thinking, which can be seen as a form of popular knowledge, reciprocal exchange and sharing. This viewa focuses on three areas: peoples organizations, local forestry and agricultural knowledge, and the potential of folk medicine. The "community rights approach", on the other hand, "cultivates a more dynamic concept of culture which can be

reproduced and articulated with the changing environment and society at large" (Anan 2000:13). In this approach, the potential of local wisdom and knowledge and of indigenous culture for fostering a more humane sustainalbe, democratic and equitable development that is recognized. According to Anan, this approach concerns two fundamental rights: the communal or collective rights of common property, customary rights in communal organizations and social management of local resources. According to Anan, "local communities will be able to increasingly articulate with the state and development activities can be carried out both at the local and national level through the process of networking and policy advocacy" (Anan 2000:14). He strongly critiques the denial of community rights and customary law by the State and processes rapid economic development , which ignore the cultural dimensions of the local community. He supports the idea that the development strategies must focus on the strengthening of local control of resources based on the knowledge of customary practices of local organizations, which are viable for reproduction through the legitimization of various community rights. This allows local communities full participation in the protection and management of their own resources.

In short, Anan provides valuable suggestions for the study of community - based natural resource management. He raises the necessity of taking the cultural dimension into account in resource management. His approach avoids the limitations of main stream approaches which pay to much attention to economic growth and certain aspects of life at the expense other cultural aspects.

Resource management can also explicate at the level of the household. Each household has their own ways to manage the resources that they have to meet their daily needs. They have a choice between making decisions in the same way as other households or in different ways. Moerman (1968) studies the choices of farmers in a Thai village in Northern Thailand. He shows that each household responded the economic development process in different way. Villagers in Ban Ping, the area where Moerman did his research, rely mostly on rice farming. Each household uses

different techniques for getting land and labor and for operating rice farms. Among these villagers, some of them choose fields near their home; others chose distant fields with lower investment cost. Villagers make individual choices based on their own farming decisions based on counting their costs which included land, labor, capital and their returns which compiled amount of rice harvested per unit of land or per unit of labor, and their cash. They did not all react to the labor limitation in the same way. In cultivation, they can choose whether cultivate in one or two or three fields, in irrigated, semi-irrigated, rainfall or flood fields. Different rice varieties were planted different from family to family. They also choose whether to use a plow or tractor in their fields.

Calavan (1977) also studies the way farmers in Northern Thailand managed their rice production resources to adapt to a "rule-setting environment". He assumes that "farmers make difficult choices vis-a-vis nature which is unpredictable but not directly opposed to their interests" (Calavan 1977: 2). He pays more attention on the choices made by farmers, their opinions and their notion about land types, land use patterns, available crops and varieties. He points out that decision-makers are capable of providing important insights into adaptive processes. In his study, he concentrates on decisions related to crop choice. Agricultural inputs, outputs and cyclical exchanges were seen as a description of adaptive strategies and decision making. For him, crucial decisions at Sansai - the place that he studied- were affected within constraints imposed by the culture, social systems, and environment. He deeply studies the decision-making skills of farmers. He found that farmer made decisions based on their estimations of not just their own yields and expenditures of their neighbors. He also studies the affect of social organization, culture such as the landlord-tenant relationship; the obligation between farming neighbors and the astrological –magical beliefs and other socio-cultural features of potential significance on decision making. He found that decision-making varied according to the farmer's education background.

From the studies of Moerman and Calavan we can see that a household's decision making and choice expresses the relationship not only between the

household and their resources but also among households and between households and community. So the community and household are combined together in managing natural resources. This is demonstrated in general obligations of community membership or in customs and regulations within the community. Through these customs and regulations the ecological knowledge of local people is revealed. I want to discuss resource management at both community and household level, pointing out the interrelationship of various social relations, and institutions in the local community. At the same time I want to emphasize that indigenous systems of natural resource management where local ecological knowledge, norms and institutions have been involved over long periods of time can play very important roles in conserving resources in effective and sustainable ways.

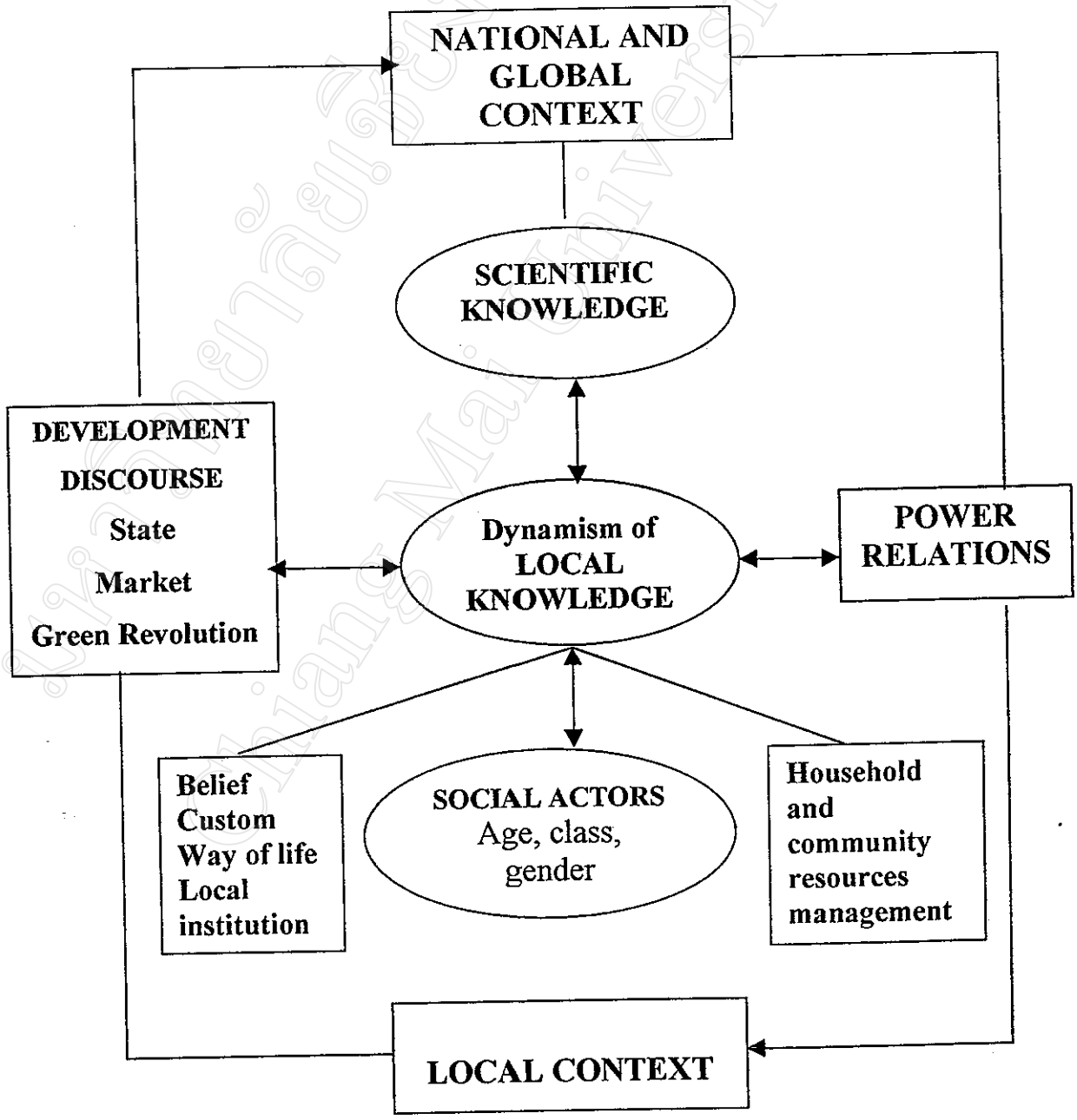
**2.4 Conceptual Framework**

In this diagram, the left part demonstrates outside forces that affect local communities. I consider the state, market, and green revolution as the three main factors that have strongly influenced changes the local community. I analyze how those factors influence the life of local peoples engaged in the development process. I will also point out both the negative and positive impacts of these factors and concentrate on how those impacts cause the changes in the awareness and thinking of local people. Their penetration from the outside step by step forces breaks in the principles of traditional community. This expresses the struggle of power happened within community and outside community.

In the main part of the diagram, I put local knowledge in its interrelationship with the development discourse, scientific knowledge, social actors, and power relations in the context of agrarian transformation as it happens at the local, national and global level. The local context includes the physical context such as the geographical features, climate, and topography of Mai village. Social context are the social relations involving land, and forest management and local social institutions. The cultural context is system of beliefs, customs, norms and values. The national and global context is the process of development, industrialization, and

commercialization. Under the influences of both external and internal factors, local ecological knowledge is not static but dynamic, constantly in the process of change.

**Figure 2-1: Conceptual Framework**



In this research, I believe that the dynamism of local knowledge has the potential to change, modify, and coexist with different systems of knowledge in a dialectical relationship within natural and social conditions. It is obvious that in certain conditions, local knowledge is dominated by scientific knowledge, therefore local knowledge is lost. In particular conditions, scientific knowledge does not completely dominate local knowledge. Rather there is an articulation between the two forms of knowledge. Local and scientific knowledge are mingled together to form a new knowledge that combines both two. My research answers the question what are those conditions and why in those conditions scientific knowledge does not completely dominate local knowledge. In my research I have explored local knowledge both beliefs and the technical aspects of local ecological knowledge at both household and community level. I also point out that the diversity of local knowledge is based on actors differentiated by age, class, gender and personal experiences.

## 2.5 Summary

In this chapter I have reviewed the works on local knowledge, agrarian transformation and community - based natural resources management. I have also analyzed the various approaches on those issues, given my own definitions and indicated the directions of my study. In doing so I hope to provide a fundamental understanding about the issues relevant on my study.