

Human Ecological Landscape Planning Process and
Social Science Method Application

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人間生態學的造景計劃過程과社會科學方法論의適用

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개요

본 연구의 목적은 인간 생태학적 조경계획의 이론적 배경과 계획과정을 살펴보고, 인간 생태학이라는 사회과학적 이론의 환경계획에의 적용 가능성 및 필요성을 밝히고자 함에 있다.

인간의 건강과 복지가 인간 생태학적 조경계획의 지침으로 제시되고 있다. 따라서 본 연구는 Philadelphia와 New York의 교외에 위치한 Upper Makefield Township 주민들의 정주유형(Settlement Patterns), 활동유형(Activity Patterns), 이용자유형(User Patterns), 인간생태학적 소구역(Human Ecological Subregion)의 구분 및 정주기준(Siting Criteria)등을 조사 연구한 후 이들의 상호관계를 밝혀 계획가들에게 인간생태계의 이해를 도모하고자 하였다.

I. Introduction

Much has been written about the determinants of form upon the landscape. McHarg, Gans, and Issard have written eloquently about natural processes, human values, and the web of economic connections which affect human activities. A planning theory of applied human ecology, using general systems theory, ecological anthropology, community studies,

and local history, is being developed to meet current planning needs.¹⁾

Ecological planning is an instrument for revealing regions as interacting and dynamic natural systems having intrinsic opportunities and constraints for all human uses. When the term is compounded into 'Human Ecological Planning' the region expanded into a physical, biological and cultural region wherein opportunities and constraints are represented in ev-

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1) Rose, Dan (1981), Energy Transition and the Local Community, University of Pennsylvania Press. p. 7.

ery realm.²⁾

This study uses a specific community, that of Upper Makefield Township in the Metropolitan Region of Philadelphia, to exemplify the use of social science methods such as settlement patterns, ethnic and religious characteristics, resident-defined land use, and a sketch cross section relevant to environment.

II. Human Ecological Planning Theory

Human ecological studies have relatively recently been attempted. Ecology has been defined as the science that deals with the interactions between living organisms and their environment, or the study of ecosystems.³⁾ Human ecology can be defined as the study of ecosystems as they affect and are affected by human beings.⁴⁾

How can landscape planning and human ecology be adapted to each other? According to current idiom, the world's ills involve the three P's—Pollution, Population and Poverty. The first two of these clearly fall within the professional concerns of the ecologist; all three are his concerns as a person.

The demand for an intensive social factor application to current ecological landscape planning first was presented as ethnography and anthropological field work. Ethnography is a method that was developed to provide descriptive information on social realities.⁵⁾ If the ecological landscape planning extends further into ethnography and anthropology it can include the study of human behavior as adaptation.

A human ecology has been developed by anthropologists who study ethnography or ecological anthropology. A human ecology

attempts to combine nature and culture. An applied human ecology is the theory which was built from general system theory, community studies, cultural ecology, applied ecology, applied anthropology, and anthropological monographs(ethnographs).⁶⁾ Now an applied human ecology has been extensively applied to the human ecological planning and design.

III. Human Ecological Planning Process

A specific planning method performs specific tasks. Human ecological planning is the planning of the interface between people and their environment. Its process is then a tool for people, conceived with a human ecological philosophy. The process can be divided into Inventory, Analysis, Synthesis, Alternatives, Implementation, and Evaluation.

Inventory

Inventory defines the parts of system. Natural scientists and social scientists locate discrete phenomena. Data at different scales and accuracies are compiled and mapped. Usually these data are displayed on a map of the same scale. The major tasks are the search, accumulation, field-checking, and mapping of data which are covered these subjects—natural sciences, physical-biological sciences, social sciences, economics, ethnography, law, etc.. Questions asked are “What is there?” and “Where is it?”. The region should be expressed as phenomena.

Analysis

Analysis can be described in simple words as ‘breaking the problem into pieces’.⁷⁾ Questions asked here are “Why is it there?”

2) Kim Jai-sik, (1984), Human Ecological Landscape Planning for Upper Makefield Township Buck Co. Pa. U. S. A., Korean Institute of Landscape Arch. Vol. 12, No. 1, P. 1.

3) Sutton, David B. (1973), Ecology: Selected Concepts, John Wiley & Sons, Inc., P. 280.

4) Ibid., P. 281.

5) Rose, Dan, OP. cit., P. X

6) Rose, Dan and Jackson, Joanne (1978), The Proceedings of the Symposium on Technical, Environmental, Socioeconomic and Regulatory Aspects of Coastal Zone Management, ASCE/San Francisco, Calif.

7) Jones, John christoper(1981), Design Methods, John Wiley & Sons, p. 63.

and "How does it work?". The scientists describe the workings of their various systems. Data are examined for patterns and cycles. Individual models of various systems are composed. Very little data is collected at this stage.

Scientists utilize graphs, equations and flow charts to describe the working of their systems. Cause and process are important. Before one can plan one must understand the system.

Synthesis

Here the planners and their consultant scientists cross-analyze all of the separate systems and components. The tool mostly utilized by planners in this situation is the two-dimensional matrix. This allows all variables to be compared with each other. The idea is to develop some capability within the limits of data and expertise to say what would be the effects of any proposed action in the environment. This scope covers both people and natural processes. Graphic cross-sections and block diagrams will show some relationships. Matrices relating groups of people to variables such as class, ethnicity, religion, and the regional modes of production will also begin to show the implicit relationships.

Alternatives

Natural processes and phenomena are evaluated in the needs and desires of a variety of consumers. Who are the potential users of the land? How do they see the future of the landscape? What landforms and settlement patterns are critical to their world view of the future? If their world view is acted out, who will suffer and who will benefit? When these questions are answered values can be applied to the natural processes of the region under study. The application of social values to natural factors is called the "suitability" process. There will be different needs and desires,

different folk models of how the world could look, different demands upon the landscape. All these are formulated into a series of alternatives.

Implementation

Implementation is a mesh between the proposed scheme, the present situation, and the habits to which people are accustomed. It is in this process that applied human ecology becomes most useful. Here the interconnection between people and their resources derived from ethnographic field work allows planners and different groups of people to build coalitions for realizing certain goals for the organization of the environment. A plan, then, is a series of economic and political actions and administrative effects worked out over a period of time.

Evaluation

Evaluation can be described as 'testing to discover the consequences of putting the new arrangement into practice'⁸⁾. Does the plan of design work? Field work done among those affected by the action will develop the guidelines for the evaluation. The health or well-being or the quality of life will be the evaluation guidelines. These definitions of health or the quality of life will vary by group of people.

IV. Social Science Method Application

The human ecological method as used in landscape planning requires information concerning user needs and desires in order to generate social factor maps to synthesize with natural factor data. With the clarification of a human ecological method in planning there has been increased demand for an improved social method applicable to problems of a design scale.

In the social study processes, there are five

8) Jones, John Christopher. op. cit., p. 63.

major tasks such as problem formulation, ground truth reconnaissance, data collection, research procedure, and land use patterns(Fig. 1.)

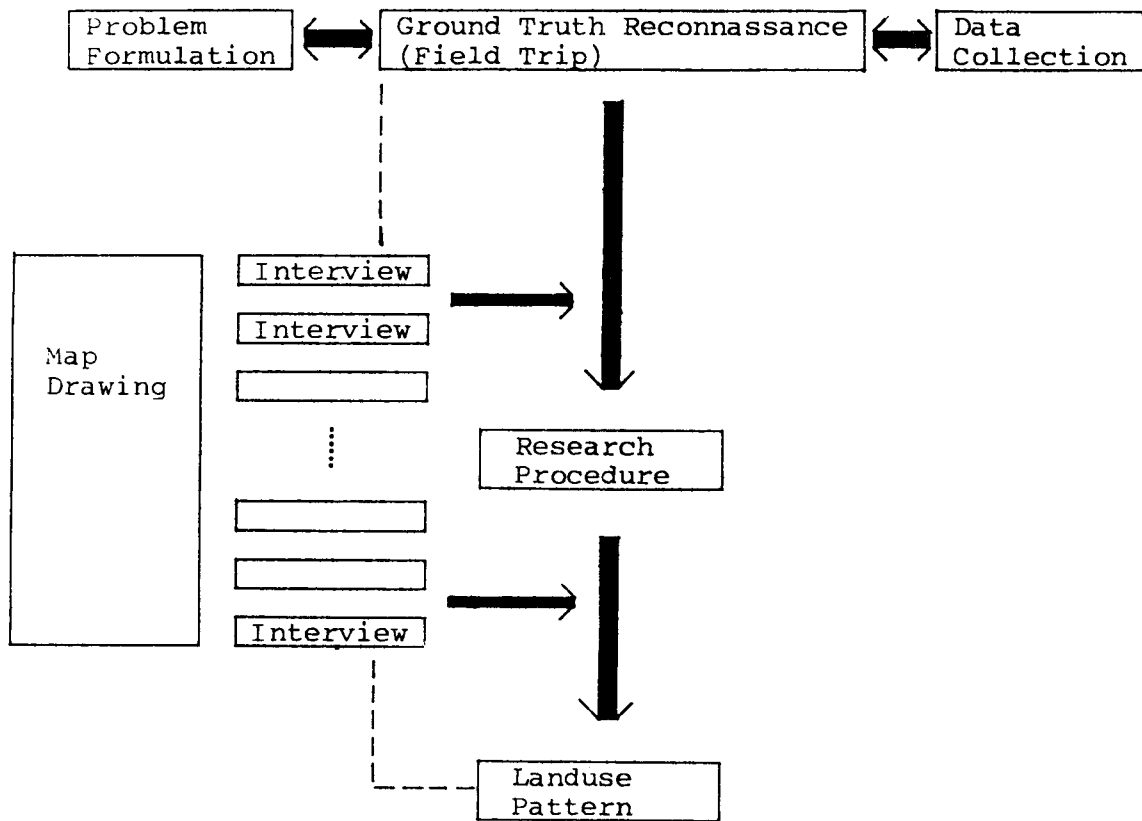


Fig. 1. SOCIAL STUDY PROCESS

Problem formulation is to make up hypotheses about what planner will find during the ground truth exercise. The reconnaissance is an anthropological method for exploring regions that have never before been mapped.⁹⁾ It can provide a wealth of direct information on the social organization of land uses.




This study used a specific community, that of Upper Makefield Township, in the Metropolitan Region of Philadelphia, to exemplify the use of social science methods.

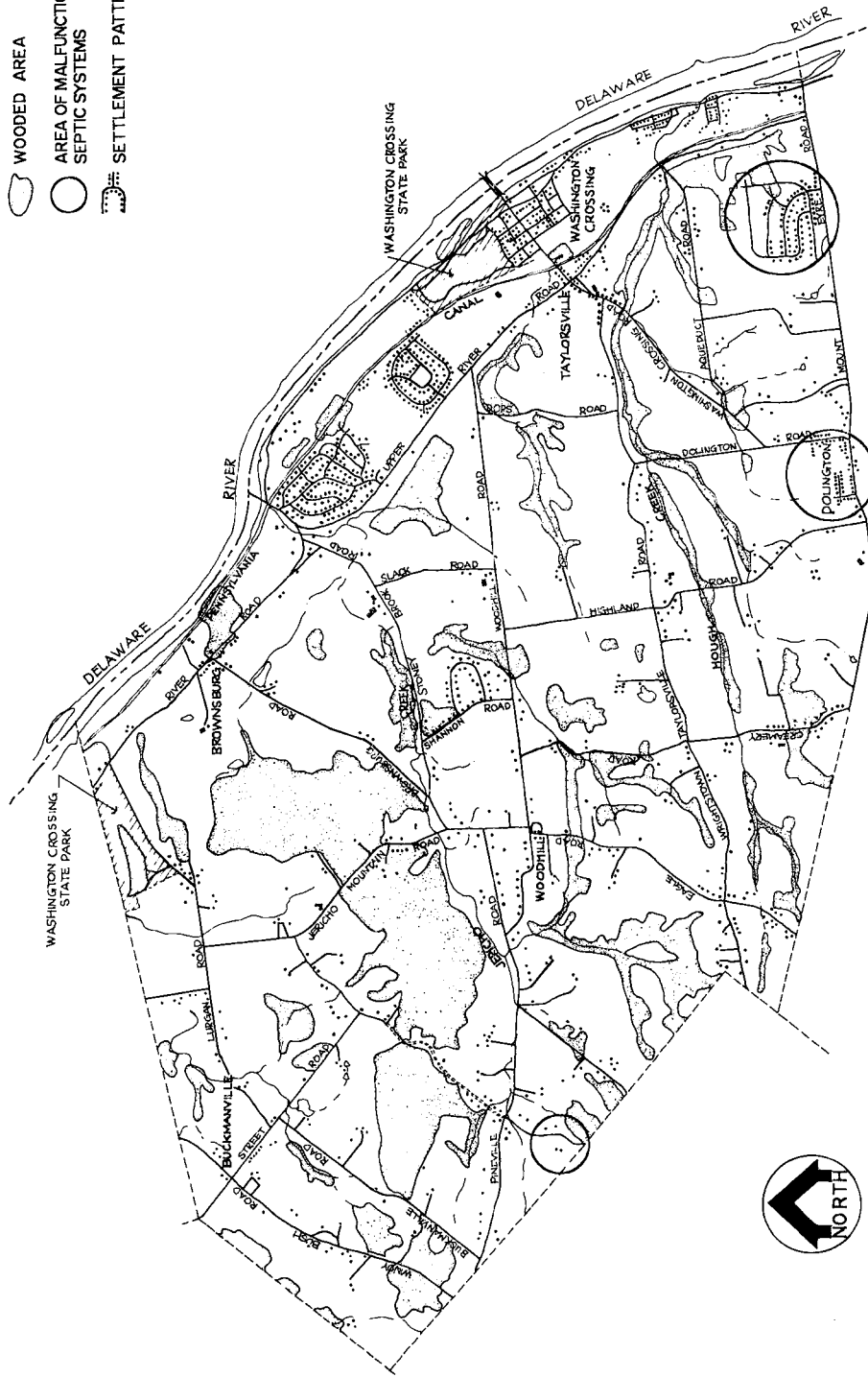
Existing Landuse

Existing landuse in Upper Makefield Township is reflective of its social and economic profiles (Fig. 2.) Therefore, the landuse pattern mirrors the dominance of an agrarian and residential community. User's siting criteria have been formulated primarily in response to transportation accessibility, visual amenities, sewage, water, and economic make-up (Table I.).

9) Rose, Dan. op. cit., p. 9.

**EXISTING
LAND USE
LEGEND**

-  WOODED AREA
-  AREA OF MALFUNCTIONING SEPTIC SYSTEMS
-  SETTLEMENT PATTERNS



Scale in Feet
1000 0 1000 3000 5000

Fig. 2. EXISTING LAND USE MAP

Table.I . Existing landuse and user's siting criteria

Existing Landuse	Siting criteria
Subdivision Residential On the Flood Plain	<ul style="list-style-type: none"> * to get a good deal on this land * a greater demand for houses inland in a more rural atmosphere * good scenic areas(Delaware River, Pennsylvania Canal) * good transportation accessibility (I-95, the Amtrak Rail) * good sewage and ground water * well-drained soils on the flat land * historical associations of the region
Dairy Farm (Slack's Farm)	<ul style="list-style-type: none"> * good water shed for livestock (near Jericho Creek) * good soils for crops and hay * gentle slope land(well-drained soils) * good market(Philadelphia, Trenton) * to enjoy hardworking farm life
Hunt Club (the Huntington Valley Hunt Club)	<ul style="list-style-type: none"> * to take place in the Jericho Valley * established in 1914 * permission from land owners * plenty of game:rabbit, pheasant, wood cocks, ducks, squirrel, canada geese, fox * good animal shelter(Jericho Mt., hedgerows)
Taylorsville Commercial District	<ul style="list-style-type: none"> * good location(the intersection of Washington Crossing Rd. and Tayl. Rd.) * advent of automobile people * strip shopping center * realtor offices
Walker co. (Animal Products Rendering)	<ul style="list-style-type: none"> * on-property water supply * good market (PA, MD, DEL, VA) * no objectable smell * good soils for sewage

Ethnic and Religious Characteristics

Population is mostly mixed background white American. Some Italian and black families have moved into Shires Crossing laterly. Now they are accepted but there was some racial tension at first. These families, like the majority of the residents in the new development, are white collar executives. Although settler was originally Quaker, only 5% of the U. M. population today is Quaker.

They go to meeting in Wrightstown or Dollywood. A good proportion of U. M. population is methodists who go to the church in Taylorsville. There are a number of Catholics who go to church in Yardly, New Hope, or New Town. Also there are some presbyterians who attend the church in Solebury, Episcopalians and other less well-represent religions make up the balance.

User Groups and Their Concern

Working farms range in size from 100 to 500 acres, and represent the major landuse in

terms of area (60%). Their concern was mainly focussed on the conservation of farm land and the tax pressure.(Table II.).

Table II. Users and their concern and future

Type of People	Their Concern	Their Idea for the Future
Farmer	<ul style="list-style-type: none"> * the pressure of development * conservation of farm land (open space group) * sewage & ground water * tax pressure 	<ul style="list-style-type: none"> * to lose good farm land * to gain speculative farm land price
Dairy Farmer	<ul style="list-style-type: none"> * water pollution * product price * tax pressure 	<ul style="list-style-type: none"> * to increase their profit * farmer's association
Gentleman Farmer	<ul style="list-style-type: none"> * tax cut * to preserve open space * development pressure * amenity of environment 	<ul style="list-style-type: none"> * to protect farms and forest lands * buy up-leased land
New Comers (Subdivision)	<ul style="list-style-type: none"> * transportation accessibility * rural atmosphere * on site recreation * school for children 	<ul style="list-style-type: none"> * lack of land ownership and their transience * lack of environmental concern
New Comers (Isolated House)	<ul style="list-style-type: none"> * rural atmosphere * transportation accessibility * escape from crowd city * school facilities for children 	<ul style="list-style-type: none"> * Jericho Valley and Jericho Mt. house * seeking out rural land with secluded, wooded area
Developer	<ul style="list-style-type: none"> * cluster type * market for the development * water pollution * ground water 	<ul style="list-style-type: none"> * municipal sewers or water service * the advent of package plants * to pursue higher land values
Supervisor	<ul style="list-style-type: none"> * no more land will be sold for agriculture * environment 	<ul style="list-style-type: none"> * all land will go to speculator * to protect stream valleys * to provide recreation
Old family Realtors	<ul style="list-style-type: none"> * to sell their land * inheritance tax 	<ul style="list-style-type: none"> * Cluster type developments on the rolling uplands
County Planning Commissioner	<ul style="list-style-type: none"> * comprehensive land planning * population growth 	<ul style="list-style-type: none"> * to keep development process * additional land requirements * additional facilities
Volunteer Association (Fire Company)	<ul style="list-style-type: none"> * to put pressure on developers to provide facilities * to conduct fund raising 	<ul style="list-style-type: none"> * enough access road * proper facilities for fighting fires

Like the subdivision dwellers, the new comers are composed of high salaried commuting professionals with families. They value the rolling wooded landscape and the privacy and exclusiveness that it can provide.

The major conflicts between old land owner and developer are the land prices and the farm land conservation trends.

The settlement patterns of this township can be taken into consideration in two major

categories, the chronological settlements and the human ecological subregions.

The pattern of working farmer's settlement is characterized by individual farmsteads set back from the road and separated from each other by fields(Fig.2.). Washington's Crossing which dates to revolutionary times, the first town grew around the inns at strategic crossroads, and became small commercial centers (Fig.3.).

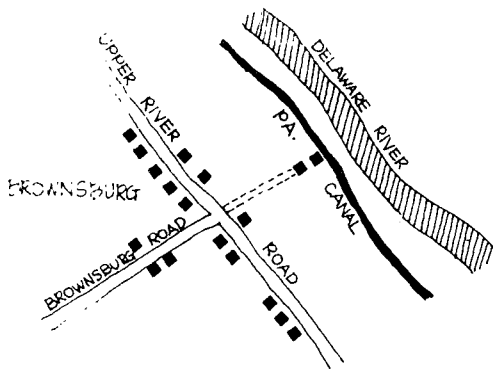
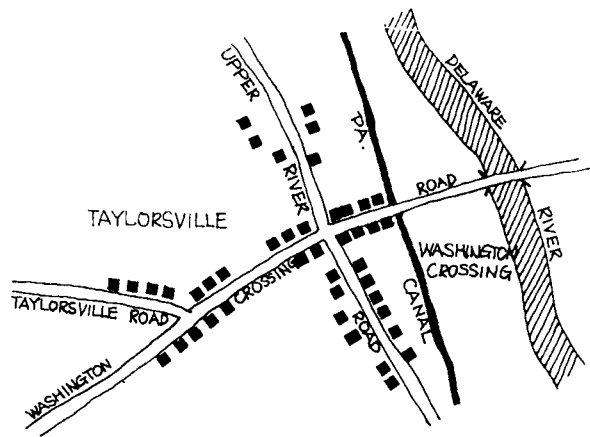


Fig.3. CROSS ROAD SETTLEMENTS



Road strip settlements were established by gentleman farmers and new comers such as executives, doctors, lawyers, and etc.. This is

a highly exclusive group to whom large tracts of land and scenic beauty are extremely important(Fig. 4).

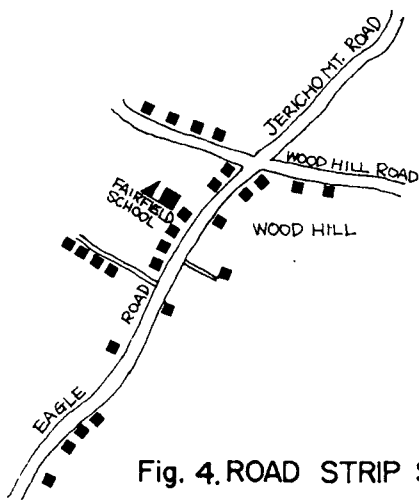
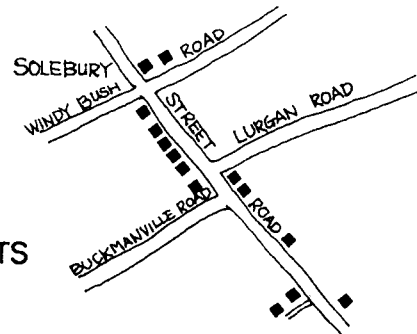


Fig. 4. ROAD STRIP SETTLEMENTS



The subdivision developments are occupied primarily by families with school age children. The residents are transient white collar profes-

sionals who commute to New York and Philadelphia(Fig. 5.). Upper Makefield provides accessible suburban areas.

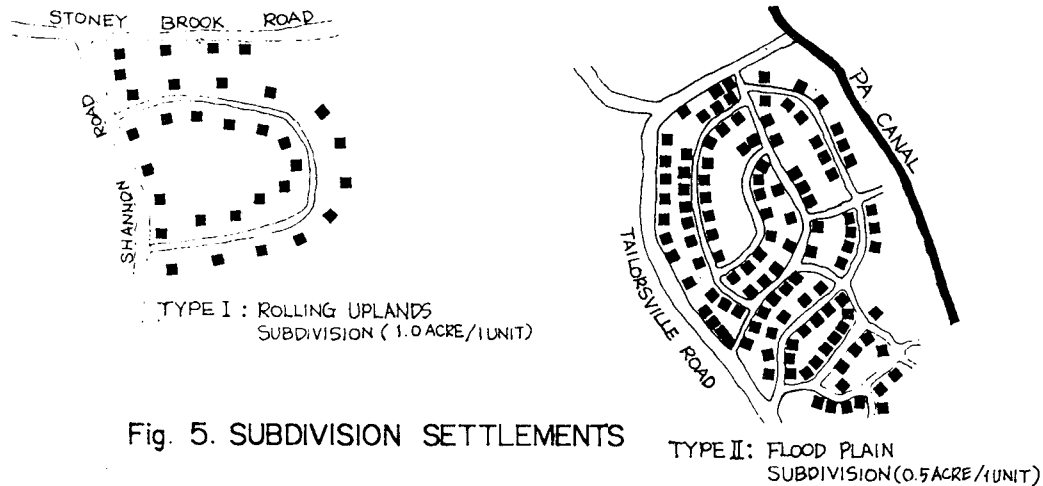


Fig. 5. SUBDIVISION SETTLEMENTS

V. Closing Remarks

From the results of this study and its theoretical and practical applications it is obvious that we cannot tell what the region will do unless we know what the people in it think of it, for what they think affects their behavior and their behavior affects its environment. The natural features of the site afforded both suitability to agriculture and amenity to human habitation (Fig. 6.).

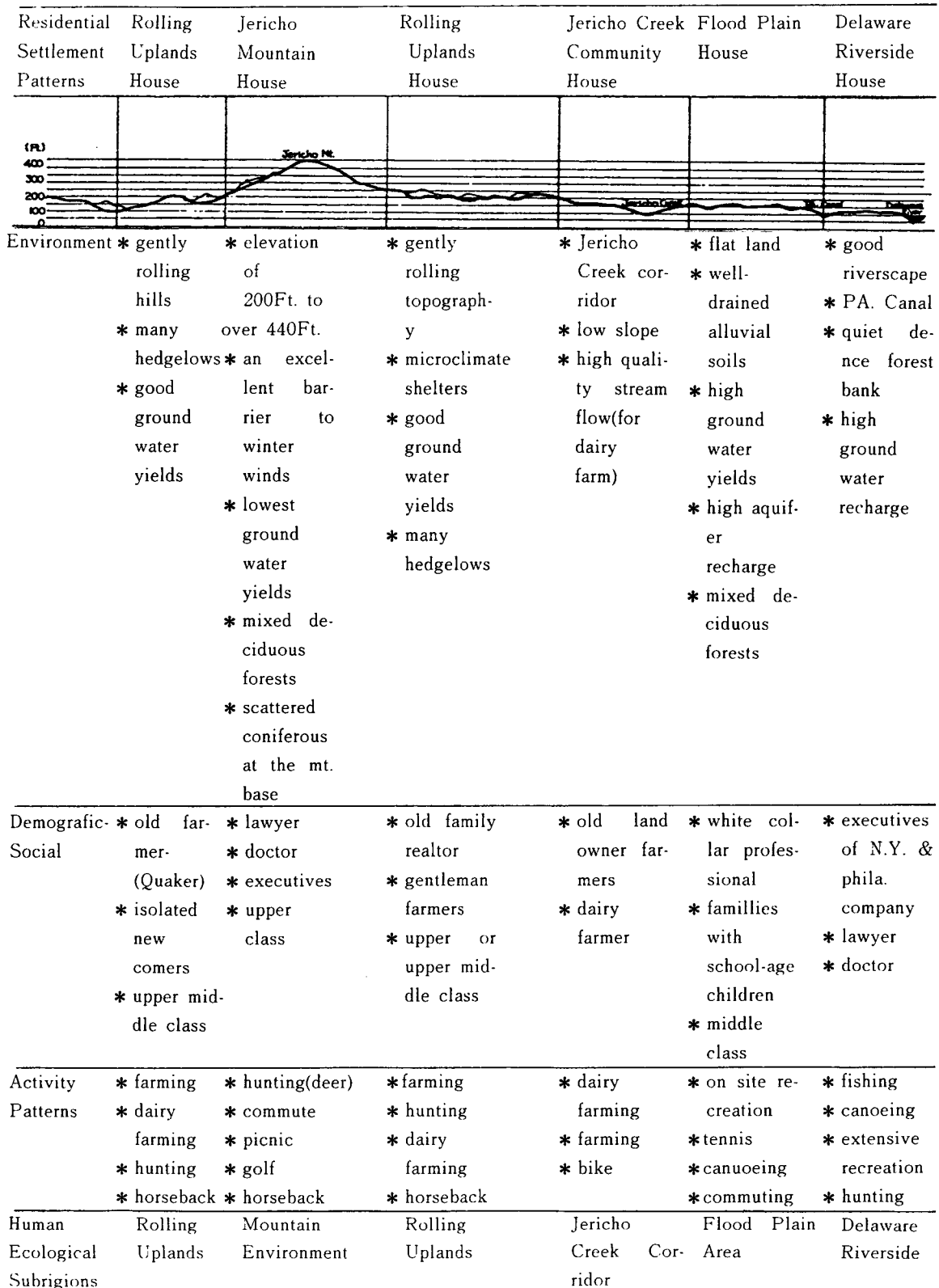
According to this study, the major social recourse for control of development on this site is now the comparatively recent and still growing group of newcomers, who once have brought a vision of amenity to the region. Accommodating future development in such a way that it does not destroy the very reasons why the people are moving in here is the challenge of the future for Upper Makefield's new gentry.

The failure of the Township Supervisors and Zoning Board to recognize the complex and vulnerable ownership and the land use patterns which make up the so called "Rural Zone" of Upper Makefield, indicates a mistaken reliance on past ownership patterns and control mechanisms, which have in fact proven inadequate in dealing with the enormous capital powers of the new land barons and the developers.

There will be a continued demand for both upper income transient and new gentry type housing. The landscape has patterns. "The place is because" (McHarg, 1969).¹⁰⁾ The settlement pattern map, the study of human ecological subregions, and the resident-defined land uses, provide planners with tools to understand the patterns of whole human ecosystem. This social science method application can show who will suffer and who will benefit from a proposed use in any region.

10) McHarg, I. L., (1969), Design with Nature, Natural History Press, p. 197.

Fig 6. Human ecological sketch cross section



References

- 1) Jones, John Cristoper(1981), Design Methods, John Wiley & Sons
- 2) Kim, Jai-sik (1984), Human Ecological Landscape Planning for Upper Makefield Township, Bucks Co. Pa. U. S. A., Korean Institute of Landscape Arch., Vol. 12, No. 1
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- 5) Rose, Dan and Jackson, Joanne(1978), The Proceedings of the Symposium on Technical, Environmental, Socioeconomic and Regulatory Aspects of Coastal Zone Management, ASCE/Sanfrancisco, Calif.
- 6) Sutton, David B. (1973). Ecology:Selected Concepts, John Wiley & Sons.