RUDIMENTS OF NATIONAL PHYSICAL PLANNING

by

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A B S T R A C T

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This abstract will summarize the following points: (a) statement of problem, (b) objectives of thesis, (c) disposition of the format, and (e) the implicit hypothesis underlying the entire thesis.

Clearly stated, the problem is one of neglect. The technical endeavor of comprehensive physical planning is a relatively young profession, witnessing vigorous growth during the last few decades, both in the country and throughout the entire world. The professional planner is concerned with, as expressed in the American Institute of Planner's Constitution: "The planning of the unified development of urban communities and their environs; and of states, regions and the nation...." Yet this author, after examining the general performance record of physical planning, must conclude that the comprehensive arrangement of national land uses and national land occupancy, and the regulation thereof, is still in a shocking and sorely underdeveloped condition while the rest of the profession has been advancing, especially on the urban scale.

Hence, the objective of this thesis is to improve the underdeveloped and neglected condition of national physical planning by constructing a worthwhile and useable concept of this professional activity, (that is, to explain in detail the rudiments of the art and science of physical planning on the national scale). Selling the idea of N.P.P. (National Physical Planning) is not the main objective of the thesis. Various reasons why it has been slow in developing (e.g. resistance of autonomous national operating agencies to overall physical planning, vested private interests, etc.) are discussed; and the concluding chapter suggests methods for future analysis of volatile causal factors, which when combined, tend to create a favorable environment for the establishment of N.P.P. Yet this thesis has restricted its primary focus to the nature, or steps of the process of N.P.P., thereby providing a crystallized concept to whomever will be engaged in the act of selling N.P.P. to a particular government and people occupying a unique physical terrain.

There was no need to invent a new structural concept, for one already existed: (1) survey and analysis, (2) goal formulation, (3) plan making, (4) plan effectuation. The thesis has taken this four-part skeleton and hopefully made it into a strong, useable concept of national physical planning. The body of N.P.P. knowledge is very thin, having only been supplied with material from a limited number of experiences (i.e. the now dead U.S. National Resources Planning Board, the three countries cited as possessing N.P.P. and other isolated sources). The success of the thesis in achieving its objective is analyzed in Chapter III--Conclusions.

The format is a thesis of three chapters and two appendices. The heart of the thesis develops in considerable detail the four steps in the national planning process. Appendix A goes on to show that a large number of elements of the process are in operation in Puerto Rico, Israel and the Netherlands, and it reveals some of the particulars of their present experiences. Appendix B is, in a sense, a documentary of what not to do. The preface to Appendix A explains the crucial distinction between comprehensive and 'facet' national planning.

The hypothesis underlying this entire thesis is that man should systematically and formally decide how he wishes to utilize his national physical environment, and he should understand the full range of implications, costs, and benefits, available to him from alternative national plans. The author does not really care if a nation does not happen to follow many of the details presented in this paper, nor does he care if that country has decided to not overtly plan, but instead follow the ups and downs of a policy of 'drift.' What the author does care about is whether the public and government of a nation have taken the time and energy to seriously consider its possible alternative future national physical environments, and whether it has arrived at a decision.

Thesis Supervisor: John T. Howard
Title: Department Head, City and Regional Planning

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I feel I must first give credit to my patient, steadfast and very helpful thesis advisor, Professor John T. Howard. He has freely given of himself in all times of need; and possessed the wisdom to allow me to experiment on my own, even when the end results were many times in doubt. I thank him.

Secondly, I must give special acknowledgement to Professor Lloyd Rodwin, who gave me the initial stimulation on the theis. For it was the many provocative sessions with him which opened so many doors of my thinking and lead me to new bodies of knowledge.

Then there is the one man who must be singled out of the department staff for his very pleasant personal way of counseling a thesis candidate. This is Professor Roland Greeley, who guided me beyond many of my blind alleys and gave me the initial drive to proceed again. Also Professor Burnham Kelly must be thanked for his number of devoted assists at crucial times in my progress. Professors Frederick Adams and Kevin Lynch were also helpful in my early days of preparation. One very vital women in the whole process has been Miss C. Shillaber, head librarian, who has gone out of her way to acquaint me with the hidden resources of the library.

The man, who more than any other, caused me to become a regional planner in the first place, and to write about this topic in the second place, is Dr. Arthur E. Morgan, past chairman of the T.V.A. and past president of Antioch College. I shall never forget my personal contacts with this powerful individual. Also deserving mention is my undergraduate professor John Lounsbury, who widened my perspectives, and gave me a fuller understanding of the many elements within man's physical environment.

I would recommend my typist, Mrs. Lillian Christmas of Cambridge, to all future M.C.P. thesis candidates after her excellent handling of everything for me.

Lastly, and clearly most important are the untold hours of encouragement and intelligent criticism that my wife has donated to these written pages.

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CHAPTER I

INTRODUCTION

Fifty years of neglect is enough. In the year 1909, professional training for physical planning had its initial beginnings at the University of Liverpool in England, and in America at Harvard University.[1] Actually the idea of planning the physical environment is a very old one. Historians and anthropologists point out that rational acts of physical planning can be traced far back to mankind's first settlements. The city-states of Greece, the urban centers of the Roman Empire, the monastic towns of the Middle Ages, and Wren's plan for London after the fire of 1666, are all European examples of this practice. In the Orient, the ancient city plan of Peking is a classic masterwork. As for the Americas, the Mayan civilization had both city and regional physical planners, as did the Incas in their Peruvian Empire. In fact, the Incas planned and built such technically superb regional irrigation systems, road networks, and hierarchies of urban centers in those lofty mountains, that no present nation has yet equalled their physical accomplishment.

However, it is generally acknowledged that the first academic and technical training for the profession of comprehensive physical planning, as we know of it today, is a comparatively recent establishment. Some

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[1]Pp. 38-40, United Nations, Department of Economic and Social Affairs; Housing, Building, and Planning Bulletin No. 11: Training for Town and Country Planning (ST/SOA/Ser. C/11), (New York, November 1957). Cited hereafter as "U.N. Bulletin #11 Training for Planning," 1957.

planners and others, might even claim that the profession does not date back more than two score years from today (1959).

But this thesis will accept the commonly acknowledged figure of fifty years for the birthdate of physical planning and will also fully accept the contemporary definition of this professional endeavor, as stated in Article II of the A.I.P. Constitution (American Institute of Planners): We are concerned with "the planning of the unified development of urban communities and their environs; and of states, regions, and the nation; as expressed through the determination of the comprehensive arrangement of land uses and land occupancy, and the regulation thereof."[2] Yet, this thesis will not accept the performance record for this activity (as herein defined) over the fifty years cited. For one element of the planning profession has almost been totally neglected, and that is the subject of the thesis.

For the most part, the overall profession has witnessed vigorous growth. During the last half century, the number of American universities conferring graduate degrees in planning has risen to twenty-two.[3] The number of other countries possessing similar training programs has also rapidly expanded. Outside of the United States this writer is aware of a multitude of educational programs for planning currently operating in every corner of the globe: Brazil, Canada, Chile, Costa Rica, Denmark, England, Argentina, Australia, Finland, France, Germany, Ghana, India, Indonesia,

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[2]American Institute of Planners, Constitution, Article II.

[3]P. 40, "U.N. Bulletin #11 Training for Planning," 1957.

Israel, Italy, the Netherlands, Norway, Peru, Puerto Rico, Scotland, Sweden, Union of South Africa, and Uruguay.[4] Probably there are many more; yet even this personal listing includes many nations from each continent in the world. If this increasing number of university classrooms and training programs is any indication of the volume of official agencies now practicing physical planning, then one is tempted to say that physical planning could be entering an era of considerable world-wide importance.

Yet when one seriously examines each of these educational programs in the penetrating light of the A.I.P. constitutional definition, the same areal void continually shows up. Almost all of the above university curricula concentrate on the urban community and its environs. A few prepare students for future work on the larger regional scale, but not one (as far as this author has been able to discover) has a graduate degree program focussed upon planning for the unified development of the nation. This sector of physical planning has received almost nothing but neglect from the technical and academic institutions of the world.

The report card on official political action for the same fifty year period (1909-1959) is somewhat better. A few national governments will at least receive commendable marks for effort.

Many countries may claim to possess a national planning of sorts, but only three contemporary agencies seem to come close to comprehensive

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[4]Fourteen of the nations listed here are documented in the United Nation's Planning Bulletin #11 (cited previously). The information on the other eleven countries has been gathered by this writer via personal correspondence and conversations with both foreign university faculty and practicing professional physical planners.

national physical planning, as described in the constitutional quote. If one is willing to grant the Commonwealth of Puerto Rico the interpretation of 'nation,' then she may join the distinguished ranks along side the State of Israel and the Kingdom of the Netherlands.[5] As the planning profession moves toward its second half century, the comprehensive arrangements of national land uses and national land occupancy and the regulation thereof, is still in a shocking and sorely underdeveloped condition.

The objective of this thesis is to improve the underdeveloped condition of national physical planning by constructing, in the following pages, a worthwhile and useable concept of this activity. That is, to explain the rudiments of the neglected art and science of national physical planning. In a sense, the writing of this thesis could be compared to the act of weaving at a loom. The author has discovered so many useable isolated strands of the topic, but seemingly no one in the past has ever been successful in assembling these bits and pieces into a complete pattern. At least the author, after a long search, has not yet uncovered any such document. Probably the closest examples of a comprehensive statement on the N.P.P. process might be the collected publications of the United States National Resources Planning Board, or a compilation of official documents from the three national governments discussed in Appendix A. All of these scattered publications are worthwhile as far as they go, but a collection of miscellaneous maps do not usually equal a complete guide book. In this

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[5]The three agencies referred to are: (1) Oficiana Del Gobernador Junta de Planificacion, San Juan, Puerto Rico; (2) The Planning Division of the Prime Minister's Office, Jerusalem, Israel; and (3) Rijksdienst Vor Het Nationale Plan, The Hague, the Netherlands.

making of the full design for national physical planning, many strands were found to be of poor quality, and in some sections there was an absolute lack of crude material. Therefore the author had to construct a quantity of the thesis material from scratch.

Besides making a full detailed four part design for the national physical planning process, the author has pointed out some related areas that need new ideas and/or additional research. And Appendix A Preface, plus Appendix B Preface thoroughly explain their own extensive contribution to the topic and support to the thesis. (Note: While reading Chapter II, the main body of the thesis, it would prove fruitful to browse through both appendices and fully read, at least, the preface to each at that time.)

The author finds it imaginable that the rudiments of national physical planning as described in Chapter II, could be used as part of a course outline in a graduate academic or professional training program.

The thesis recognizes five basic criteria which will have to be satisfied before the objective, of making a useable and worthwhile concept of national physical planning, is achieved. These criteria are:

1. That a thesis research project on the graduate level should not be undertaken unless the problem is both of interest and of importance,
2. that the resulting concept should be fairly universal in its application, (i.e., The detailed process, as described herein, should generally be adaptable to any 'free' and 'democratic' nation wishing to attempt physical planning on this scale.),

3. that the thesis be capable of being tested, and those tests recorded (as the M.I.T. Graduate School Manual states: "A thesis must include all work, in such detail, that the method and process may be repeated by any one skilled in the art."[6]) (This thesis will endeavor to do precisely that. The procedural details of the concept are developed in the main body of the thesis under 'laboratory' situations, with the hopeful result that any skilled physical planner could repeat this method in the 'field' -- the actual national physical environment.),
4. that the topic be significant at its designated national level and suited for operating at that environmental scale, and
5. that the subject be comprehensive in its inclusion of all factors of the physical environment, both functional and geographic, in addition to being geared towards action for the unified development and alteration of a country's land uses and land occupancy.

The conclusion will check this thesis to see if it successfully satisfied each one of these listed criteria.

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[6] p. 46, Graduate School Manual (Cambridge, Massachusetts: Massachusetts Institute of Technology, Fifth Edition, September, 1958).

As for the professional classification of this topic, the thesis assumes that the endeavor of physical planning is composed of two major, and somewhat distinct, divisions: (1) urban planning and (2) regional planning; and that comprehensive national physical planning is a subdivision of the later.

The thesis also takes the liberty to restrict its professional considerations of the concept as it applies to only those national governments which could generally be described as 'free' (meeting the stipulations of 'the International Charter on Human Rights' of the United Nations) and 'democratic' (meaning that policy is collectively arrived at, either by direct popular referendum and/or by the vote of representatives elected to express the will of their constituents).

There are a few remaining introductory comments. Because the topic has received little or no attention in the past, and since the thesis is solely the results of but one individual's research and thinking, it seems only fitting that its character should be described as rudimentary. The main body is sprinkled with charts and various types of illustrative examples, and perhaps it suffers something of a lumpy dissertation. The limitations in writing style, organization of the thesis, and in the ideas presented are those solely of the author.

This thesis hopes, in its own small way, to contribute a little toward the building of a higher and finer stage of civilization by vitalizing and developing this neglected concept. Maybe it is the present amorphousness of national physical planning which creates misunderstandings and confusions that prevent many people and nations from realizing the idea's potential for greatness. That notable potential is the national

improvement of the physical environment for the benefit of its human occupants. The thesis is focussed upon clarifying this concept.

A first step in the direction of a more crystallized concept would be to devise a crisp cipher to represent this sector of the general planning discipline. The three words -- national physical planning -- tend to become overly long and cumbrous. Therefore, this thesis will frequently use the abbreviated 'N.P.P.' as an alternative label.

CHAPTER II

THE BASIC NATIONAL PHYSICAL PLANNING PROCESS

This thesis is primarily focussed upon the nature, or steps, of the process of national physical planning. There is really no need to invent a new method, because one already exists. The major difficulty, however, is that this generally recognized planning process has seldom, if ever, been fully tried out on the 'national' physical environment. Because of this lack of use, few, if any, strong bodies of N.P.P. knowledge have ever been developed. In fact, a piercing investigation into this body of planning information leaves one with not much more than bare bones.

The basic physical planning process has been crystallized by Prof. Frederick J. Adams (past Department Head, City and Regional Planning, M.I.T.), into four distinct phases:[7] (1) survey and analysis, (2) goal formulation, (3) plan making, and (4) plan effectuation. Perhaps someone might be inclined to add a minor step or two; but these four are the essential substructures for the concept (physical planning) and, as such, they'll serve as the skeleton on which this thesis will begin to mold the national process.

The contents of the four phases will be developed in the rational order cited above. Of course, it is understood that, in reality, the physical planner will be operating on two or more steps of the national

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[7]Frederick J. Adams, Urban Planning Education in the United States (Cincinnati, Ohio: Alfred Bettman Foundation, 1954).

process simultaneously. But even with this jumping back and forth, the N.P.P. agency will generally progress along from phase one's survey through to phase four's effectuation. And actually the national physical planning survey and analysis should be shaped by the: (A) beginning notions on goals, (B) existing implementation avenues, and (C) the available tools, procedures, and techniques of plan making. In other words, the N.P.P. survey and analysis step is not its own master, but instead is the servant of the other three phases.

Many times, however, the survey may come across situations unknown to the existing body of knowledge; hence, phase one will then be in a position to reshape: (A) the range of 'probable goals,' (B) the set of 'useable' plan making techniques, and (C) the system of 'effective' implementations. This is a natural interrelationship. Even though this thesis begins the N.P.P. process with data collecting and analysis (and there is every logical reason to start here), the national agency must also begin simultaneously with the other three steps, or maybe even do a little work with these three phases before embarking upon survey and analysis.

In addition, the national agency does not cease its phase one activity when it moves the major focus on to phase two and three and four. Some elements of survey and analysis are always in the works. This same continuous operation applies to all the other steps in the N.P.P. process also. As a closing acknowledgement, it is recognized that not everything is prone towards inclusion in one or another distinct phase; some elements will quite naturally overlap into a number of the steps. Yet the crystallized idea of four phases is a very useful analytical device to present

the rudimentary contents of comprehensive N.P.P. process. Now on to details in depth.

Phase 1. Survey and Analysis for National Physical Planning

This first step is one of gathering information about the (a) national physical environment, (b) its occupants and (c) their utilization of the land. This is not an academic finding of facts for the sake of interesting and scientific facts alone. Rather its purpose is to understand the reasons for activity location (e.g. farm crop belts, manufacturing regions, zones of low density, metropolises, etc.) and subsequently to comprehend the underlying forces which shape the hierarchial pattern of national settlement. In other words, the aim of the survey and analysis phase is to forecast future trends in national land use and occupancy. But these N.P.P. projections will not be used as a prediction of the inevitable. Instead the physical planner will work with these forecasts as a statement of the range within which a choice is made. The manner of making an environmental choice will be discussed in detail under the phases of 'goal formulation' and 'plan making.' Suffice it to say that the information gathered must be more than descriptive facts. This data needs to be analyzed, then classified in such a manner as to prepare the national planner for the next process: the controlled change of that surveyed physical environment.

The analysis should identify the pressures for the growth and change of the nation, and the limitations upon that future expansion and environmental rearrangement. Examples of possible national pressures are:

(a) population increase; (b) 'imbalance' in population distribution; (c) need for more acres in food products, (d) changing major economic activity from agriculture (rural) to industrial (urban); (e) exhaustion of a resource (e.g. soil and now 'dust bowl,' or forests and now 'cut-over land,' or mineral ore and now 'ghost town'); (f) public demand for services and amenities (e.g. public recreation lands, preservation of wild-life, new and better roads, public works and housing); (g) technological changes (e.g. switch over from public transit and/or bicycle commuting to space consuming private automobiles, switch from vacant ocean-side desert to fresh-water citrus groves, from uninhabitable northern mountains to mineral processing cities under climate-controlled domes) and; (h) develop-ment 'norm' changes (e.g. new single family residential sprawl replacing old multi-family residential column with resulting loss of inlying rural land, new out-lying, isolated factory resulting in farm product towards cash crops to compete with industrial wages).

And on the opposite side, examples of <u>limitations</u> upon national growth and change occur in the three subcategories of N.P.P. survey and analysis:

(1) natural limitations of the physical environment

- (a) land area (country not optimum? size)
- (b) physiographic (if no flat fertile lands, then no prospect for crop cultivation)
- (c) climate (science has not yet reached a point of altering national weather patterns)
- (d) water (the correct type and amount for economic consumption in industrial, agricultural, and human use)

(2) social limitations of the national occupants

- (e) fiscal inabilities (both public and private) to carry out and build plan - also lack of foreign capital

(f) cultural values of the population opposing planned activities and/or modern innovations
(g) legal inabilities to implement plan
(h) political apathy, distrust, instability, or lack of competence

(3) limitations arising from the existing and past utilization of the land

(i) existing committed land uses not susceptible to foreseeable change (e.g. watershed reservations, military training camps, major urban centers)
(j) past misuses of the environment which limit its future use (e.g. uncontrolled soil erosion resulting in loss of rich land, depletion of timber resources, ruthless and wasteful exploitation of fuel and mineral raw materials, etc.)

With the general survey information, plus these illustrations of what to seek out, only the proper 'setting' need yet to be found. Probably the best context in which to pursue this first phase of the N.P.P. process is a global one. Logic would indicate that a country, much like a human being, can better understand the numerous quantitative and qualitative facts about itself, when these data are compared with similar figures describing its international colleagues. This frame-of-reference notion is not new to physical planning. On the urban scale, analytical comparisons of land characteristics between different cities are normally made within a nation-wide frame of reference. Witness the physical planner Bartholomew's comparison of acreage ratios for land uses in different American cities.[8]

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[8] P. 38, Lecture notes: "Course 4.54 - City Planning Techniques I," Professor John T. Howard, Department of City and Regional Planning, Massachusetts Institute of Technology, Spring Term, 1958. Cited hereafter as "Howard's Notes - Techniques I," 1958.

Now with this established, the thesis will begin developing and shaping a rudimentary body for those bare bones of N.P.P.

A. National Survey and Analysis of the Physical Environment

Facts concerning land are for the physical planner the most important. Certainly figures on the areal dimensions of countries are vital to the national physical planner. The global variations run from the postage stamp size of Andorra, lodged in the Pyrennes, to the enveloping Soviet Union, which extends across both the European and Asian continents. Nations of the world can be roughly divided into five classes on the basis of the space they occupy.[9] Admittedly the precise demarcation between one class of national size and another is an arbitrary line. But the contention is that an analytical distinction between spatial variations is serviceable. In a sense, this is akin to the U.S. Census Bureau's distinction of "S.M.A." (Standard Metropolitan Area) for American cities over 100,000 in size. This type of demarcation is as useful to the urban physical planner, as the following chart is to the national planner.

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[9]P. 308, J. H. Bradley, World Geography (Boston, Massachusetts: Ginn and Company, 1951). The square mile criteria used in this ranking is J. H. Bradley's. The classification titles and the national examples are the thesis writer's.

Classification	Range of Size	National Examples
"Continental"	1,000,000 sq. mi. or over	Australia, U.S.A., India, U.S.S.R., Canada, Brazil
"Spacious"	100,000 to 999,000 sq. mi.	Sweden, Mexico, Pakistan, Turkey, Finland, Columbia
"Midsized"	50,000 to 99,000 sq. mi.	United Kingdom, Ghana, Korea, W. Germany, Uruguay, Yugoslavia
"Provincial"	1,000 to 49,000 sq. mi.	Netherlands, Ceylon, Israel, Switzerland, Puerto Rico, Belgium
"Miniature"	under 1,000 sq. mi.	Monaco, Luxemburg, Guam, Andorra, Hong Kong, Azores

Why is it advantageous for the physical planner to be conscious of the spatial differences between nations? An obvious reason is that the approach to a comprehensive land planning program on the modest sized island of Puerto Rico will be extremely different from the N.P.P. program for the continental island of Australia. Also this writer suggests it's more than coincidence to find that the three countries of the world which have to date found national physical planning a manageable operation are all grouped in the "Provincial" classification (1,000 to 49,000 square miles): Israel, the Netherlands, Puerto Rico. (For further discussion of this see Appendix A.)

Necessary next, is information about the natural features on and under the classified nation. The experts, whom the planner should call upon, for this segment of the survey are, for the most part, natural scientists. Obviously bedrock must come first. The data on this is in the domain of the geologist. He would investigate the origin of the country's land, and be able to advance clues on its potential uses and productivity.

It makes a great difference, to the range of feasible plans, if the land origin is glaciated, or sedimentary limestone, or lava alluvium, or some form of a geological combination. This technical exploration assisted by hydrologists, petrologists, mineralogists, etc. will also look into the underlying materials, perhaps discovering oil fields, iron deposits, coal, zinc, and/or abundant ground water supplies of high quality. These natural resources clearly have a decided effect on the growth and change of a country.

For example, Ghana initially made plans to proceed ahead with agricultural development until a national mineral survey discovered sizeable deposits of bauxite, and a national hydraulic survey analyzed the cheap electric potential of a dam on the Volta River. Now the newest national developmental plan has been decidedly changed. It, today, is moving forward on both the industrial and agricultural fronts. Because of elements of the survey and analysis phase, the future environment of this West African nation will be altered considerably.[10]

Also the underlying materials play an important role in the physical environment by their production of the surface layer soils. The two types of experts who should be called in for the national soils survey are the agronomist and the soils engineer. The three elements of classification will be: (1) type -- describing the texture, load bearing properties, and its reaction to water, etc.; (2) phase of development -- analyzing

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[10]David A. Jokinen, "Analysis: Gold Coast" (an unpublished paper for the undergraduate seminar "Area Analysis," Geography Department, Antioch College, 1957).

where virgin soils, eroded soils, etc. are located; and (3) the series -- their color, national distribution and function classification, etc. An investigation into the chemical composition of soils should also be undertaken to determine their suitable crops, fertilizer needs, and so forth. A properly executed national soils survey, with its resulting data geared for application, can be useful on both the urban and rural scene. In urban areas it can tell where construction will be easy or expensive (for buildings and underground systems such as subways and water pipes, sewer pipes). In rural areas the data will assist in the estimates of productivity, intelligent selection of crops to be cultivated, and general land management. From the total national perspective, this data coupled with other survey and analysis information, will contribute greatly to the overall important planning decisions, such as where urban centers should and should not encrouch upon vital rural soil zones, etc.

The natural vegetation and animal covering of the physical environment is a segment of the surface survey that should not be overlooked. The outside experts to assist the planner in this study would probably be the ecologist and biologist. In some areas of a nation, one can no longer find strains of the natural flora and fauna because man has changed the micro-environment so radically. The survey of natural environment covering should classify regions as to their repelling or compelling factors for man. A repelling flora and fauna would be one that is difficult to clear for farming (e.g. tropical rainforest), while a compelling animal and vegetative natural covering would be land with commercially profitable timber and abundant game for trapping, etc.

An illustration of just the plant side of this survey would be to catalog the country's environment into the three basic types: (1) grass, (2) forest and (3) tundra, and then to break this down into the many sub-types of each. For example, much of the state of Ohio (U.S.A.) would be: forest - hardwood - oak and hickory. The uses of this data, after it had been analyzed, are cited below. In a subarid grass land (prairie, plains or steppe), the planner would know whether to plow under the whole zone, or to plant wide strips of wheat inter-mixed with strips of natural grass which will not be uprooted. In a forested region, the planner can call for performance standards on tree farming, that is, Douglas firs are purposely destroyed when the trunks reach a certain diameter and new firs are purposely planted to give a sustained yield, etc.

The national surface survey would not be complete without technical assistance from the physical geographer and the hydrographic engineer. From their work comes a mapping of all the topographic features of the countryside (deserts, mountains, swamps, hills, plains, valleys, plateaus, canyons, etc.), plus the national surface drainage system (major river basins with multiple tributary networks, inland lakes, coastal drainage, harbors, estuaries, etc.). The data on slope and physiography will spot: (a) sections of the country that should perhaps, neither be tilled nor built upon, (b) valleys and gaps for transcontinental surface lines of transportation, (c) zones with minimal or maximal capacities of population absorption, and so on. The hydrographic information will locate: (a) regions prone to disastrous erosion, (b) water networks with great potentials for transportation, (c) river and coastal polluted waters, (d) flood plains

that should never be built upon, (e) potential hydroelectric sites, (f) regions susceptible to irrigation and (g) desirable surface water supplies for domestic and industrial use.

Man's concern with the physical environment is not limited to the ground and its subsurface features; there is one remaining sphere which people seem to always be talking about. For the study of the atmosphere and climate both the meteorologist and the aerograhical physicist would provide valuable information. This will include temperature data, showing minimums and maximums (in time dimension and spatial dimension) average temperature and its reliability. Figures on humidity, air pressures, wind and precipitation (amount, when, where, averages and deviations) would also be in the survey. This information would be analyzed and then utilized for such things as (a) location of places susceptible to wind erosion; (b) mapping of areas with long growing seasons (number of frost free days), and 'effective' growing season regions (number of days over 40° F); (c) smoothest routes for passenger air transportation; (d) fastest routes (with jetstream tailwinds) for air freight (either manned craft or rockets); (e) sections of the nation with generally undesirable atmospheric features (e.g. lengthy, high humidity discomfort zones, areas too cold or too hot or too dry for human settlement, constantly high air pressure zones with possible causal effects for suicide); and (f) climatic regions of the nation most suited for specialized functions (winter recreation, motion picture industry, 'retirement belts,' etc.).

Now comes the most important, and most difficult, part in this national survey and analysis of the physical environment. Comprehensive

planning demands comprehensive information, not isolated survey sheets. The soils survey should be overlaid on the topographic survey, and then the water drainage map superimposed. Next the ground cover sheet, plus, of course, the atmospheric and underground data. Now, this phase is approaching a two dimensional representation (at a manageable scale) of the three dimensional reality: the actual national environment. Plus the fact that the N.P.P. agency now has a record of each step, and also multiple step information.

However, integration of this data will not come automatically from the putting of all the enumerated natural science specialists into one 'mixing room.' Perhaps its much like a vinegar and oil salad dressing, (i.e. the planner will have to shake well before using, and then between uses the material will partially separate out until the next time it is taken from storage).

B. National Occupants Survey and Analysis

The physical planner cannot know too much about the occupants of the nation for which he is working. The understanding of human needs is the very basis of, and for, planning. People are the fundamental reason any planning is undertaken. And the professional practitioner of N.P.P. hopes that in a modest way his share of the planning can contribute a little to the preservation of human existence.[11]

The first segment of this survey 'set the national stage,' so to speak. Now this segment will 'go back stage' to survey and analyze the

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[11]Paraphrased from Richard Neutra, Survival Through Design (New York: Oxford University Press, 1954).

actors. Of course, the first thing to find out is how many exist; and then figure if there are too many for the sized country they happen to be occupying.

In establishing the global frame of reference for the previous survey (physical environment), a chart was shown classifying countries by territorial size. To set this human survey in its global context, the construction of an international chart, ranking nations by their total population might be interesting. Even more worthwhile would be a comparative chart which integrates total land size with each country's aggregate population, hence depicting the average number of occupants on each square mile (or square kilometer) of national territory. Density is the general term for this type of information. Before making this international contrast, an earth-wide density should be computed. The total world land area in round figures is 55,900,000 square miles.[12] A 1959 estimate of our grand total population is placed at 2.7 billion.[13] Therefore, today's density is an average of about 48 occupants for each square mile of earth. What about yesterday's density? To be able to calculate this, one needs to know the world's population at various points in history. Then a meaningful time comparison can be made. The growth of the world's population from 500 A.D. to the present is illustrated below.[14] Also on the chart is the number# forecast for the year 2,000 A.D.

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[12]p. 26, Rand McNally - Pocket World Atlas (New York: Pocket Books Inc., 1951).

[13]p. 20, The Population Bomb (New York: Hugh Moore Fund, 1957).

[14]p. 6, The Population Bomb (New York: Hugh Moore Fund, 1957).

by the United Nations. (Their prediction ranges from a conservative low of 5.5 billion people to a possible high population of 7 billion.)[15]

Time		People
Breakdown of last 500 years	In intervals of 500 years	
	500 A.D.	.3 billion
	1000 A.D.	.3 billion
	1500 A.D.	.5 billion
1750 A.D.		.75 billion
1900 A.D.		1.50 billion
1950 A.D.		2.30 billion
	2000 A.D.	6.25 billion*

To pursue this time comparison somewhat deeper: it was in the 16th century that the era of exploration was finally completed; and man realized, perhaps for the first time, that not only (1) was the world truly round, but that (2) homo-sapiens occupied six out of the seven continents (the last being too cold for all except participants of the International Geophysical Year). That century (1500-1600) would seem to be the first statistically honest period for an earth-wide land occupancy figure. Something in the vicinity of 10 persons to the square mile was the average global density at that time. Today's average of nearly fifty will certainly look sparse to the crowded world of the 21st century. At the point of 2000 A.D., that same square mile of land which housed ten people in the

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[15]P. 21, The Boston Globe, June 17, 1959.

sixteenth century, may be called upon to hold 110 teeming occupants.

Quite obviously, as this global frame of reference moves toward higher densities, so, too, each nation's land occupancy figures will reflect the trend toward denser, more crowded countries. The variations between average national densities are interesting and significant for N.P.P. These variations occur both in the degree of density between nations, and in the time dimension within each country. The chart below illustrates both types of differences in national land occupancy.[16] A sophistication of this measurement 'useable area' will be reviewed later.

"Average National Density"
(persons/square mile)

Country	1900	1953
United States	30	50
France	180	210
Denmark	160	260
Switzerland	210	310
W. Germany	300	520
Great Britain	400	540
Netherlands	400	840

This writer suggests that there is a relationship, perhaps a direct one, between an extremely high national population density, and the feelings

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[16] The source of this chart and a more complete international listing can be found on page 12, Physical Planning in the Netherlands (The Hague: Netherlands Government Information Service, August 1955). This writer does not know if a full-fledged density comparison between all nations of the world has ever been attempted. Cited hereafter as "Planning in Holland," 1955.

of the electorate towards establishing a national government physical planning agency. Very few countries in the world have N.P.P. as yet and as was brought out in the thesis introduction. Puerto Rico has N.P.P. and Puerto Rico also has an average national density of 640 people per square mile.[17] National physical planning as an official government service bureau exists in the Netherlands, as does an exceedingly high density of 840 persons/square mile, (cited in the chart above).

It seems only logical that as 'land' becomes a scarce commodity, and as the competition between national land users for survival and expansion becomes more intense, the public will lean toward national government as the arbitrator of conflicts and the protector of public welfare. The technical task of properly rationing this precious resource, land, to the most essential uses often determines the future stability of the country's economy and the social well being of its citizens. Indeed, the physical planners of nations have very responsible tasks. National land becomes more valuable as: (1) its occupants and uses become more intensified, and (2) the margin for speculation and error becomes smaller and smaller.

One of the many global measures of present and future pressures on national land, is the rate of a country's population increase. The next chart of selected examples illustrates the wide range of variance between countries. The figures given here are from the statistical office of the

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[17] P. 10, Eduardo Barañano, Regional Plan for the San Juan Metropolitan Area, A consultant plan prepared for the Puerto Rico Planning Board (New York: Aldus Printers, 1956). Cited hereafter as "Barañano's Plan for San Juan," 1956.

United Nations. For our global frame of reference, the U.N. calculates 1.6 as the percentage of annual world population growth.[18]

Annual % Rate* of National Population Increase 1953-1956

3.9 Costa Rica	2.7 Canada	1.8 U.S.A.	0.4 United Kingdom	-0.5 Ireland
3.5 Israel	2.3 Egypt	1.2 Netherlands		
3.1 Venezuela	2.2 China (mainland)	1.1 Switzerland		
		1.1 Germany		

*Formula: $P_1 = P_0 (1 + R)^t \times 100$

P_1 = Population 1956

P_0 = Population 1953

R = Annual Rate of Change

t = 3 (number of years between 1953 and 1956)

A cross comparison of two previous charts (pages 23 and 25) identifies some interesting population pressures for national growth and change. Note particularly the two most dense countries (Great Britain and the Netherlands) and their strongly different annual rates of national population increase. The United Kingdom is now fairly crowded, but the trend of annual increase (0.4%) shows relatively little future population pressure. On the other hand, the Netherlands was much more dense in 1953 (840 people/square mile to the U.K.'s 540), and the annual rate of increase

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[18] Pp. 106-123, Table #1, Demographic Yearbook, 9th Issue (New York: Statistical Office of the United Nations, 1957).

for Holland is the highest for a west European nation. Another lucid reason explaining why the Dutch are one of the world's pioneers in national physical planning might be the above. An interesting observation concerning the United Nation's chart (on annual rate of population increase) is that every European country is below the global average rate of 1.6%.

It is essential to the internal national survey that global comparisons of density and population growth be made. A country might be aware that it is crowded, but not until that nation realizes it has one of the highest densities in the world, will its politicians, technicians, and citizenry be shocked into action. An additional benefit to the country comes from an investigation of the planning operations in other nations of similar densities. Here one nation can profit from the mistakes and advances of international colleagues who are equally crowded. Of course, many of these global cross-fertilizations will have to be tempered with the individual pressures and limitations of each specific land.

Global comparisons of the annual rate of population increases produce similar benefits. For example, it means nothing to the layman to hear that a Latin American country is experiencing a growth of more than 3% per annum if there are no comparative rates. But once that Latin American N.P.P. agency establishes the fact that this is one of the very highest rates of population increases in the world, then the public and government officials will be more likely to seriously plan the physical environment to accommodate their onrush of occupants.

Also another critical relationship is highlighted. National physical planning is only part of a complete development program; economic planning,

social policy, and other elements are also generally involved. And when the N.P.P. survey reveals a fantastically rapid increase in national occupants, the whole multi-disciplined national development program should be mobilized. For nations with more than a 3% per annum population growth are potentially in real trouble; because the whole national rate of development must be very high just to keep even with the increasing population. If that country has a popular goal of desiring a higher standard of living for each and every citizen, then the national physical planning operation and the other segments of the overall development program will have to exert their activities beyond the critical break-even point; or increase will have to be adopted. These issues will be discussed in more detail later. The role of the survey was to bring these matters to the forefront and to place them in their proper global perspective.

Within each national frame of reference this survey material can be refined further. A sub-national regional map of differences in population increase, plus a breakdown of differing regional densities should be made. To assist the planner with this national occupancy survey, the N.P.P. agency should have on its staff (or at least in close consulting capacity) a wide selection of social scientists and related experts. On the specific mapping work mentioned above (regional densities and population rates), a demographer would be invaluable.

An interesting analytical feature for N.P.P. purposes is Davis and Golden's concept of a 'National Urbanization Ratio.' Their formula is $U = \frac{Pc}{Pt}$ (when U = urbanization, Pc = population city, and Pt = population

national total).[19] Their beginnings of a global frame of reference show, among other things, that Egypt is more 'urbanized' than Sweden or France, and that nations like Korea, Greece, Lebanon, and Egypt are far more urbanized than their degree of economic development (which is low) would indicate.

These various types of demographic survey and analysis information will be put to direct use in the process of making the national plan. The physical planner now knows what sections of his country are occupied most intensely and also where future population pressures on land will occur. An average national density figure is fine as far as it goes, but data on the number of people per arable, or habitable, square mile is utterly essential (especially in mountainous countries like Norway, frigid lands like Siberia, or tropical zones like the Amazon Valley in Brazil). This leads into a national population distribution chart/map showing possible regions, or spots, of 'overcrowding,' plus 'empty zones' which may have a potential for future occupancy (depending upon minor environmental changes). The filling up of these 'empty zones' might also involve the need for changes in the country's public opinion, or shifts of attitudes in some vital segment of the aggregate population. This calls for persuasion and an education program from the national planner. (Note the difference in the two types of density measurements in Israel, Appendix A.)

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[19] Pp. 6-24, K. Davis and H. H. Golden, (Journal of) Economic Development and Cultural Change, Vol. 3, No. 1 (October, 1954).

Internal and international migration data should also be fed into the analysis of national occupants. The importance of population movements, into or out of a country, are vividly demonstrated in both Appendix A and Appendix B. Norway and Italy experienced the same reaction (national 'facet' planning) when their 'surplus' population couldn't continue the flow to America. All three countries (Israel, the Netherlands, and Puerto Rico), which presently possess comprehensive N.P.P., have recently, and are still, contributors or receivers of international population movements. But here the global context is not as important as the migration between different regions within one country. The reasons for discounting international migration today (except for special cases like the three just cited) can be found in Gunnar Myrdal's statement: "The whole world has since the first World War gradually settled down to a situation in which immigrants are on the whole not welcome. By and large, tourism apart, people have to stay in the country where they were born. And so far as the larger part of the underdeveloped world is concerned, where people are 'colored' according to the definition in the countries which are white or white dominated and at the same time better off economically, emigration is usually stopped altogether by the color bar set up either by the legislature or in the administration of those countries."[20]

Population shifts within a country can be a major factor of growth or change for the physical environment. For example, a net high rate of rural population growth in regions that are already dense, forces 'surplus'

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[20] P. 54, Gunnar Myrdal, Rich Lands and Poor (New York: Harper and Brothers, 1957). Cited hereafter as Myrdal, Rich Lands and Poor.

population to the bright lights and dim prospects of the big city. This particular migration pattern occurs today in almost every developing area, from Africa and Asia to Latin America. To be able to anticipate the magnitude of this human tidal wave, before any plan can be made, the national occupant survey must correlate regional employment and especially unemployment data, with the aforementioned demographic information. (Sophisticated examples of this can be found in the Netherlands N.P.P. publications, Appendix A.)

The social science expert in this line is the economist. His employment data will also include a breakdown of national percentages for the various occupations. Within a global setting, this index of the national percentage employed in each occupational sector is very meaningful, both to the economist and to the physical planner. To the practitioner who works at arranging components of the national physical environment, the following chart will convey many hidden faces. Take the column 'manufacturing and public utilities' for example. The high country is the United Kingdom; its high number of urban centers show through. The low country is Turkey, with the column for 'agriculture' where the high and low positions of the two nations are, quite expectedly, reversed. And the character (heavy industry and processing of raw materials) of many of Britain's cities is revealed by her high per cent in the mining column. Here is a list of selected nations illustrating the occupational breakdown for the 'economically-active' in the population.[21] (A note of caution: The data

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[21] P. 8, F. E. Lukerman and J. C. Weaver, A World Statistical Survey of Commercial Production (Minneapolis: Burgess Publishing Co., 1950). The sources they list for their table are: Demograghic Yearbook of the United Nations, 1948, and Statistical Yearbook of the League of Nations, 1931-1932.

are for some countries pre-World War II, while for the rest, the figures are post war. Yet it still provides a valuable global comparison.)

% of national total 'economically-active'		Agriculture	Mining	Manufacturing and public utilities	Construction	Commerce	Transportation and communication
42.6	Australia	21.0	2.5	19.0	11.5	16.0	8.0
40.6	Canada	26.0	2.0	21.0	4.5	12.0	5.5
51.8	Denmark	28.5	---	24.5	6.0	12.5	6.0
42.4	India	67.5	---	10.5	---	5.5	1.5
43.2	Italy	48.0	0.5	21.5	5.5	8.5	4.0
43.4	Japan	53.5	2.0	17.5	4.0	7.0	4.5
32.2	Mexico	67.5	1.0	12.0	1.0	5.0	2.5
40.2	Netherlands	20.5	1.5	29.0	8.0	14.0	9.5
46.8	Switzerland	21.0	0.5	36.0	7.0	10.0	4.0
49.0	Turkey	82.0	---	8.0	---	3.0	1.0
47.0	U.K.	6.0	6.0	40.0	---	16.0	7.0
40.0	U.S.A.	17.5	2.0	24.5	7.0	16.0	6.0

The economist can also, in a global context, classify nations that will experience another type of pressure for change and growth. The index of this pressure are the international variations in per capita volume of consumer purchasing power. Its repercussions will be clearly visible on the physical environment of a good number of countries. First to present the figures, and then to discuss their international significance. Here

is a 1953 comparison of per capita 'consumer' income for selected lands:[22]

Country	$	Country	$	Country	$
U.S.A.	1,908	Canada	1,318	Switzerland	995
U.K.	930	Australia	921	Sweden	910
Denmark	740	France	600	W. Germany	482
U.S.S.R.	441	Eire	416	U.S.S.R. European satellites	369
Argentina	366	Italy	307	Mexico	207
Japan	197	India	60	China (mainland)	60

(Note: All estimates have been converted by the Center for International Studies, M.I.T. into U.S. dollars, at exchange rates designed to reflect actual purchasing power; but all figures should be regarded as approximations.)

"The facts of international economic inequalities in the present world, when viewed in the very broadest perspective, fall into a definite and simple pattern. A few countries are highly developed economically and have very high levels of average real income per head... This is the economic upper class of nations in world society. The lower class of nations is far bigger."[23]

The general term for these lands with a low per capita income is 'developing area,' or 'underdeveloped country.' As mentioned before, the bulk of Asia, Africa and Latin America can be so described. For N.P.P.

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[22]P. 67, Paul A. Samuelson, Economics -- An Introductory Analysis (New York: McGraw Hill, Inc., 1958).

[23]P. 3, Myrdal, Rich Lands and Poor.

survey purposes, this classification has real meaning. For as Myrdal goes on to say, "The most important change in state policies in underdeveloped countries is the common understanding that they should each and all have a national economic development policy. Indeed it is also universally urged that each of them should have an over-all, integrated national plan. All underdeveloped countries are now attempting to provide themselves with such a plan, except a few that have not yet been reached by the Great Awakening."[24]

This social scientist goes on to explain, "A main purpose of every national development plan is to proclaim a decision to increase the total amount of investment aimed at raising the productive powers of the country and to define the ways by which this can be done. The plan must determine this over-all amount and must, in addition, determine the proportions of the capital to be allocated in different directions: to increasing the over-all facilities in transport and power production; to constructing new plants and acquiring the machinery for heavy industries and for light industries of various types; to raising the level of productivity in agriculture by long term investments in irrigation schemes and short term investments in tools, machinery and fertilizers; to improving the levels of health, education and training of the working people, and so on."[25]

This is a great challenge to national physical planning. Perhaps, this one pressure (the desire to be an economically advanced nation) is the

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[24]P. 81, Myrdal, Rich Lands and Poor.

[25]P. 83, Myrdal, Rich Lands and Poor.

most dominant global force for environmental change yet mentioned in the N.P.P. survey. The examples above, in the majority of cases, dramatically involve "The --- (blank) development of urban communities and their environs; and of states, regions, and the nation; as expressed through the determination of the --- (blank) arrangement of land uses and land occupancy and the regulation thereof." In rementioning this definition quoted earlier from the A.I.P. constitution, two words have been left blank. This was done purposely, for the words are 'unified' development and 'comprehensive' arrangement.

The challenge to N.P.P. is clear. The national economic planner is out to: increase transport facilities -- thus reshaping the national circulation network; increase power production -- thus improving the intensity and regional distribution of the national grid; construct new plants -- thus altering industrial zoning, also constructing new commuting schemes -- thus giving the rural landscape a complete face lifting; improve the levels of health and education -- thus facilitating the need for building and locating new public schools, adult education centers, workers' trade schools, public health units, hospitals and so on. In other words, as the economic planner proceeds to carry out his program, he seemingly becomes enmeshed in the country's physical environment. It is only logical that in developing the national economy, the national environment must also be developed. True, the spatial dimension is only one of the many planes on which economic planning operates, however, it is a crucial dimension. Yet the physical planning dimension is often overlooked by the national economic analysts.

As Lloyd Rodwin frequently reminds us, the actual subject matter of these two fields are intrinsically linked and interlocked; yet the majority of professional economic and physical planners seldom comprehend this reality. The lack of joint enterprise can be attributed mostly to the 'blind spot' in each of their academic training.[26] Hence, with national development stumbling along in artificial and isolated academic compartments, there can be no claim of 'unified' development for urban communities, regions and the nation as a whole. And, too, with the national economic planner neglecting the contribution of the physical planner, his new industrial, transport, irrigation and educational facilities will not be arranged in a 'comprehensive' way, neither as they relate to themselves, nor to the rest of the existing physical environment. The results can be tragic, both to advanced nations and developing areas.

Just one example of noncomprehensive and disorderly physical development is cited by the international economist, Gunnar Myrdal, "A major purpose of the national plan is to effect the strictest economy with the available resources. Rational economic behavior is always concerned with allocating scarce resources among alternative uses; this is the reality behind the notion of 'opportunity costs.' If, as a matter of fact, many underdeveloped countries demonstrate a shocking waste of very scarce resources in 'showpiece' public works and in subsidizing expensive starts

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[26]Seminar Notes: "Course 4.84 - Land Use Problems in Developing Areas," Professor Lloyd Rodwin, Department of City and Regional Planning, Massachusetts Institute of Technology, Spring Term, 1958. Rodwin is, himself, atypical because he does happen to be a professional hybrid, combining land economics and physical planning.

of investment and production along blind alleys, this is the result of a failure in planning, and the only cure is to improve the planning."[27]

The contention of this thesis is that improvement will come only when it is understood that this pressure to raise per-capita-income bears down on both the national economy and the environment. Typically, the assumption of the economic planner is: that when capital has been properly allocated on the national level, all other contingent factors will almost automatically fall into their 'correct' places. The economic analyst/planner generally has little concern for national land uses. What he usually fails to realize is that there is a wide range of possible national patterns for the spatial distribution of economic activity; and that the proper allocation of national land uses can play a very crucial role in the satisfaction of the economist's 'central tendency' of wanting to get the most from the least. (This matter will be discussed more in the 'plan making' phase.)

If this is true that national economic planning can not get along without physical planners, so also is the reverse true. For the economist is a crucial member of the N.P.P. survey team, especially in those countries which lack official programs to initiate, co-ordinate, and channelize national economic development.

The economist's data, beyond the already discussed employment information and per capita figures, will include economic base analyses. They will be local, regional and national. This will be the measuring of

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[27] P. 94, Myrdal, Rich Lands and Poor.

economic activity by classification of 'basic' (exported) and 'service' (consumed locally); or 'primary' (extractive, e.g. mining, cultivation), 'secondary' (processing of mineral/vegetable/animal raw materials), and 'tertiary' (services as opposed to products). The economist will present his survey findings in such a form so as to illustrate the national distribution and 'spots of intensity' for major economic activity. His analysis will relate economic factors to noneconomic variables and determinants, resulting in a statement of present strengths and weaknesses in the national pattern, plus forecasts of future development.

J. T. Howard clearly shows how the physical planner puts these economic activity projections to work, "Their use is not as a prediction of the inevitable, but as a statement of the range in which a choice can be made and also (a) an identification of key problems subject to solution, or attack, through (physical) planning, and of key factors whose influences may be changed through (the same) planning; (b) a measure of future environmental requirements, e.g. land for industry; (c) a measure of future economic capacity for public improvements."[28]

Another social scientist who should be on the N.P.P. survey and analysis team is the cultural anthropologist. His investigations will highlight two cultural phenomena: (1) customs, and (2) values. The context in which he will analyze these national traits, will be their relationship to the physical environment, that is, how the national customs help determine land uses, and how the country's physical environment helps

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[28]P. 7, Howard Notes - "Techniques I," 1958.

to shape customs. The same two-way street will be explored between cultural values and the environment. The social psychologist will also be most helpful in this segment of the national occupants survey, especially when it comes to detailed, technical methods of investigation, plus verification of research findings. This investigation should also reveal the degree and type of cultural pluralism in the nation, or demonstrate its monoculturalism. Other indices like race, religion, national origin, etc. would also be brought out. (For example see Israel's survey in Appendix A.)

Additional population characteristics should also be fed into the national physical planning survey. Here the sociologist is essential. His information would complement the existing data on population totals, density, income, occupations, urban/rural, trends of increase/decrease, geographic distribution, etc. The additional survey would disclose an age and sex breakdown for the nation and its subregions. Then cross correlations would be run between various characteristics and each area's population pyramid.

Also the sociologist would develop a set of indices to classify the nation, and regional population groups, into percentage clusters of upper class, middle class, lower class, and subdivisions of same. He would project the statistical differences between these various classes for future points in time, and include that in the survey material. The implications of this data to the growth and change of the physical environment is myriad. Its impact will especially be felt under the pressure which is labeled development 'norms.'

To name instances of altered development norms, one needs only think of specific types of land use. The national total of public facilities and space (especially recreation) will generally be quite different in a predominantly lower class nation than it would be in a country with mostly middle class occupants. The reason for this is that the middle class usually desires, and provides itself with much private and/or individual recreation space; while the lower class must generally depend upon public spots. This has especially been the case in urban and rural India and Latin America.

In countries predominantly urban, the national total and regional subtotal of urban residential land use can be significant. Here again the total will usually be quite different for middle and for lower class majorities. For the middle class will generally not accept as high an urban housing density as the lower class will. Hence, a national trend in the survey towards a larger (percentage-wise) middle class normally means more land for residential use. This causes difficulties when land is scarce.

Another physical feature which would have to be expanded is public transportation (within cities, between rural hinterlands and their urban centers, and between cities themselves). This, too, means significant areas of land (both in size and strategic location) devoted to a specific use which wouldn't have to be planned for if a different percentage breakdown of upper/middle/lower existed.

The sociologist might investigate additional population indices, such as detailed health characteristics, and their regional/national variations. Alterations in the physical environment, especially sanitary

improvements, can have direct benefits in this area. Education is another factor which should be explored in depth; it is an immediate contributor and receiver of environmental change. Social welfare belongs fairly much in the same category.

A general political survey would entail the services of a political scientist, a lawyer, and a public administrator. One of the factors within the global framework is differing national political institutions. Two concepts to explore are the (1) capital division of political power and the (2) areal division of power. For N.P.P. purposes the national capital power division needs be explored for only the institutional machinery, i.e. parliamentary structure; U.S.A. model of executive, judicial, legislative separation of power; constitutional monarchy, etc. The capital division of powers will effect the implementation of national physical planning, the location of the N.P.P. agency in the governmental organization, the process of plan making, in addition to the general political ramifications which tend to limit and/or channelize planning efforts.

The areal division of political powers is even more important to N.P.P. To give just a sketch of the global variations: (1) Some countries have the bulk of the real political power (especially as it effects physical planning) in the local governments (urban and rural), e.g. England, Denmark, etc.; (2) Some nations have situated the true balance of domestic power within the middle tier of government (provinces, regions, states), e.g. Australia, Canada, West Germany, etc.; (3) Other lands have no 'middle tier' for the legislative function, but only for administrative

purposes (districts, departments), and the power resides in the national parliament, e.g. Israel, France, etc.; (4) There are a multitude of other combinations, e.g. in the U.S.A., on paper the state governments control much of the domestic power, but in reality the federal structure has radically changed since 1776 and the central government now calls most of the shots, but many times still works through the empty state frameworks; the United Kingdom has different domestic control machinery for each areal unit (Wales, North Ireland, England, and Scotland), etc.

This information, compiled and analyzed by the political scientist, has a direct bearing on whether national physical planning would even survive in a particular country; and if it did survive, the level of real power would influence the N.P.P. organization that would most likely result. For example, this thesis author feels strongly that it is more than coincidence to find Israel, the Netherlands, and Puerto Rico all belonging to the areal division of political powers which places the national government superior to all and any regional or local government. This factor in the survey also contributes to the explanation of why the United Kingdom has fought longer than most countries for national physical planning and still has only a scattering of national 'facet' plans. (See Preface to Appendix A for details on this, plus the examples in Appendix B.) The areal division of power might also be one of the related elements in the short-lived American attempt at national planning.

To document the powerful limiting factor of the areal division of political powers, one need only look at the strongly local-oriented federal structure in Switzerland: "Efforts toward physical planning (national, regional, or local) in Switzerland must unfortunately be based on an

inadequate legislative foundation. The Swiss federal state has left legislation in building matters to the cantons, which, in many cases possess laws that are antiquated or that are in need of reform, or can only apply the provisions of the code of civil law. In the last few years there were not many cantons which passed laws favorable to the idea of (regional or local) planning. To be sure, even in federal legislation there have been isolated cases of laws which may be cited in the interests of measures of planning; but it lies in the nature of a federal state that only such matters are absolutely necessary are regulated from a central instance. General recognition of national physical planning as a task of the state has not yet been achieved, and we may say that there is no promise of such recognition in the near future. Legislation for the implementation of comprehensive measures of planning is not to be expected for a long time to come."[29]

The reasons for discussing the divisions of political powers at this point in the thesis are two: (1) to give the general context of wide national variations, and (2) more importantly, to demonstrate to the N.P.P. agency the interrelationship between survey information and the effectuation phase. For after an international comparison of various types of areal divisions of power, and their implications to national physical planning, the agency may find itself publicly recommending, with justifiable logic, some alterations in its own national political structure.

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[29] P. 163, Schweizerische Vereinigung Für Landeplanung, The Implementation of Planning Measures - Switzerland, A Report to the International Congress for Housing and Town Planning on "The Implementation of Planning Measures," Amsterdam, 1950.

The lawyer's part in the general political survey is to investigate the existing national legal system affecting all phases of national plan implementation. A major part of this study will focus upon the pattern of land ownership, and the procedure used to transfer real estate. The global number of variations on private and public land ownership forms is enormous. The international differences in market mechanisms outnumber those in land holding law. These institutions form an important framework within which each country's N.P.P. program must adapt itself, and find avenues for effective operation.

The public administrator, with an expertness in fiscal analysis, would explore the nation's ability to publicly finance alternative model plans at different points in time. This would also include a global comparison of differing national per capital expenditures for planning and environmental development. The role, financially and otherwise, of public vs. private, plus selected combinations, of land development would be analyzed, and the implications of each form will be clearly stated as part of the survey and analysis phase findings.

As the last element of the national occupant survey and analysis, the technological investigation should not be viewed as ranking last in importance. Indeed, the ramifications of this investigation might, in many countries, far outshadow all other elements of the N.P.P. survey phase. It's quite difficult to specify the type of person who should head up this investigation. The individual most likely to perform a competent piece of work on this topic might be someone similar to a historian and/or philosopher of science and technology, with a strong vein

of engineering reality and intermittent spurts of science fiction. He must be able to survey the existing technological achievements of the nation's human occupants, plus forecast ranges of future feasible technology based on his analysis of the trend in skills and education of those occupants. The predictions of achievement must include those developments which would be likely at a certain point in time, and at a specific cost. Also the forecast must give educated hunches about the unlikely and potentially surprising inventions. The technological investigation quite clearly has to fit the unique characteristics of each nation (e.g. in a country with no coal or oil deposits most attention might be focussed on atomic energy or perhaps tidal and hydroelectric power, or solar energy; in a primitive land, transportation technology might not be concerned with sophisticated refinement, but rather the basic factors; in a desert region, the survey might exhaustively pursue the possibilities of converting solar energy to work power; and an agricultural land might explore not only new farm machinery but also chemicals and other advances). It goes without saying that the investigation will conduct a global examination of all existing forms of applied science, and make recommendations on techniques with a potential for this nation's environmental improvement.

C. National Survey and Analysis on the Use of the Physical Environment

The first part of the survey 'set the stage' (physical environment) and the second part examined the actors (the national occupants). Now this third and remaining part of the survey will observe the results of having the actors on the stage (human use of the physical environment). Natural scientists were called upon in the first part, social scientists

assisted on the second, now both the natural and social scientist (and especially hybrid combinations like cultural geographers or agricultural economists) will participate in this national land use survey. Of course, here is where the physical planner moves beyond the point of survey coordinator (performed in parts one and two) and assumes the role of chief investigator. His investigation will show both the places where man has decided to make radical changes in the environment, and those locations where man has made few, if any, alterations to the natural landscape.

Actually very little survey work has been done on man's use of his national territory. One of the few, and probably the best national example of note, is Dr. Dudley Stamp's project, with the London School of Economics, on the "Surface Utilization of Great Britain."[30] A set of maps has been published (1 inch scale) for the entire nation, showing the use to which British land is actually put (according to use classification). A limited amount of color has been added to the black and white prints to draw attention to certain features, (e.g. roads, water, contours, woodlands, etc.). The large urban areas have been left blank, because more detailed land use surveys have been made by the individual cities' planning authorities. On these more detailed maps the use of every building is indicated and, in many cases, its actual condition.

"An influential (national) committee has been formed to carry this open country survey a stage further, and to show not only the present use,

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[30]P. 46, Professor Patrick Abercrombie, National and Regional Planning in Great Britain, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937. Cited hereafter as "Abercrombie Report to I.F.H.T.P.," 1937.

but the potential value, both for cultivation and mineral resource development (of Great Britain); there will be, among other things soil maps combined with climatic and other elements affecting productivity. The proposal (1937) also includes a complete aerial survey of the entire nation, and its publication on a convenient scale."[31]

Because of the lack of work in this area, there is not enough data to construct a global comparison chart. However, when this activity of national surveys does come into common practice, there should be an effort to standardize the classifications so as to facilitate accurate and meaningful international comparisons. Each national land use study will categorize, by percentage, the amounts of physical environment presently devoted to various uses (i.e. 10% of the national area is occupied by water, 15% - urban, 5% - suburban, 30% - forested, 40% - farmland). Both the surveyor and the geodesist will be helpful in this measurement stage. This survey should actually list the breakdown of national land not only in a descriptive way, but also in a manner which prepares the terrain for the planner to do something to it, i.e. 16% of total area is non-useable (deserts, etc.), 30% is of limited uses (only grazing or only woodproducing, etc.), 54% is of many potential uses (cropland, urban land, etc.). This latter category raises the problem of the highest and best uses for the flat and fertile areas of the country. Also the national land use survey should include intensity of uses, character and conditions, in addition to the type of utilization.

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[31] P. 46, "Abercrombie Report to I.F.H.T.P.," 1937.

This survey, of man's use of the country's land area, draws heavily upon the earlier examination of the natural physical environment, but it goes further. Man and his influence are purposely missing from the first examination; while in this survey, man's interaction with his land is the central theme. The natural scientists contributed to an understanding of the inorganic and biological features in the environment, plus their potentials and restrictions. Now the new man-made features (roads, farms, cities, etc.) are also analyzed and rendered comprehendible. Yet, this still is only a step toward the ultimate result of the land utilization survey, for the main purpose of this N.P.P. investigation is to forecast land uses. This involves correlating the supply of land with the demand for the use of that land, as seen from the previous population and economic studies. The planner now has data and trends on the various future elements of a national plan: the landscape, the people, their activity, and the location of its occurence.

One of the important characteristics which sould be analyzed is how man has specialized the function of certain spots on the activity landscape. For a rudimentary international survey of this phenomenon one need only look at the different functions or dominance of certain cities in each country. For example, the factors of national (1) economic dominance, (2) political dominance and (3) cultural dominance:

a. In the U.S.A., according to Hoselitz,[32] Detroit and Chicago hold the national economic dominance; Washington, D.C. is

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[32]Pp. 278-294, Bert F. Hoselitz, "Generative and Parasitic Cities," Journal of Political Economy (June, 1953).

sole holder of national political dominance; and New York City and Los Angeles have the national cultural dominance.

b. In the Netherlands national economic dominance is held by Rotterdam (industrial) and Amsterdam (commercial); national political dominance is split between The Hague (seat of government agencies) and Amsterdam (seat of Parliament); and national cultural dominance is solely held by Amsterdam.

c. In a good many countries, all three functions of national dominance are wrapped up in a single city: France - Paris, Norway - Oslo, Argentina - Buenos Aires, Denmark - Copenhagen, Greece - Athens, Thailand - Bangkok, Puerto Rico - San Juan, Uruguay - Montevideo, and Ireland/Eire - Dublin.

The analysis and survey of a country's physical environment should distinguish between the 'fixed' centers of areas of settlement and the 'moving' or circulatory elements (e.g. rivers, railroads, airways, utility lines, and highways, etc.) which flow between and interconnect the multitude of isolated spots on the landscape, thus holding together the national activity pattern. These moving elements carry, among other things, commodities, wastes and, of course, people. The expert to assist on this task is the civil and transportation engineer.

Studies into the circulatory components would result in a national inventory of the various modes of transportation, with a range of their capabilities, costs, and the best uses for each. What type of service should the railroad be required to give? And where does a pipeline best handle the job? The planner will be seeking answers to these, and other questions in order to place an array of transportation alternatives before

the public.

Also these studies will produce a national inventory of the present uses and maluses of the country's network of rivers. Should such-and-such a tributary serve only for the transporting of commodities, or can it also carry treated wastes, and maybe produce power at a few locations? Included in this national utilization survey would be the whole issue of future water supply. This combines data from part one of the N.P.P. survey, which discovers how much water there is in the physical environment (surface water sources, ground water, converted sea water, etc.) with figures from part two of the survey which forecasts how many users there will be, and how much they will consume per capita.

Coupled with the previously gathered information on property rights (e.g. squatters, public leasing and/or public ownership, via fee simple, etc.) should come description material on settlement patterns. How does man build on this land (that he owns, rents or leases)? The international comparison of rural community patterns is especially illuminating. For example: (a) The general pattern in Europe is to cluster the rural settlement into villages at cross roads; (b) In French Canada the farmland is divided into long narrow strips stretching up from the river, with each farmhouse close to its neighbor, and in a row along the riverbank; (c) In Egypt the rural settlements cluster at wet points, around each oasis; (d) In Asia the common pattern is to seek out the dry points, and to build linear, shoestring communities on the dry levies of rivers; (e) In the United States farmhouses stand isolated from their neighbors, each on their 160 acre plot; and (f) In Italy, more often than not, the rural

pattern is a series of small nodal clusters on the hills as protection from malaria. Surely a similar range of global differences in the locational and structural features of urban settlement could also be demonstrated. The cultural geographer would be a worthwhile survey assistant to the physical planner on these matters.

Then, within the national context, the regional variations in major land uses should be analyzed. The reasons for these assorted regional use differences must be thoroughly examined, and the full implications of each pattern explained. Both the agricultural economist and industrial economist would make contributions on this matter of each activity's rational or irrational reasons for being. The economic geographer and the land economist should be called to evaluate the spatial pattern and distribution of the regional and national activity. The feasible alternative patterns for each subnational region should then be compared with the existing pattern of land use and occupancy. Background information on the history of each region's surface utilization should accompany the other analytical material. This clearly is a task for capable economic historians and settlement geographers.

One could go on discussing all the factors in a national land use survey, but since this is the central area of familiarity to the physical planner, it is assumed that the professional planner can, in his own mind, transfer additional city and regional survey operations into the N.P.P. sphere by clothing them in new, nationalized examples. This third part of the survey/analysis process should integrate all the previous survey data into a coherent whole and make it into useable material for the next steps in the process of national physical planning. The public cannot

make wise decisions, nor can it instruct government representatives until the survey data reveals the full implications of the existing, and potential uses of the national physical environment. When this information is in clear, understandable form, then goal formulation can effectively proceed. The technical planner cannot get very deep into plan making until the analysis data is in shape. And those responsible for national plan effectuation must also have the facts to back them up.

One of the basic and vital questions which synthesizes the survey material into shape for ready application is 'whether the country now, or in the near future, has too many people considering the capabilities of its physical environment'?. This is an exceedingly difficult question to unequivocally answer one way or the other, especially because of the number, and combination of strategic variables. However, a good attempt at answering this crucial query is revealing, in the national interest, and absolutely worth the effort.

It is the considered opinion of professional demographers and sociologists that only a small number of countries in the world today still possess a very favorable balance of population to their national resources, enabling them to easily increase the well-being of their national occupants. Those lands in this very favored position, population wise, are the U.S.A., Canada, U.S.S.R., Australia and New Zealand.[33] These

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[33]p. 87, Fredrick Osborn, Population: An International Dilemma, A Summary of the Proceedings of the Conference Committee on Population Problems, 1956-1957, New York, The Population Council (Princeton, N.J.: Princeton University Press, 1958).

professionals in population problems also discuss the trends for these few nations; but the author could not find a listing of countries which are only in a moderate balance between people and natural resources. The concept of a balanced relationship of national occupants with their physical environment surely integrates various N.P.P. survey facts around a central point.

This serious matter of a country's future total population is not solely within the physical planner's core of competence, as this writer views it; the economic and social planners must also be involved. Very large future numbers of people can severely increase the pressure on the land. The responsibility for resolving this matter is vested in the national government, especially the legislature, who will adopt one of the alternative national population policies, if the constituency favors it. The role of the N.P.P. practitioner is to offer all necessary advice concerning the physical environment implications of future population forecasts, especially the distribution aspect; plus assisting in the overall development of concrete alternative proposals, with clear statements of each model's implications. This part of the process will be discussed in more detail in a later national plan making phase.

(Note: Even though this phase - survey and analysis - has taken roughly one-half of the total pages, it is not necessarily the most important step in the national physical planning process. That distinction should probably be conferred on the goal formulation phase. The length of survey and analysis is the result of three factors: (1) the inherent nature of the material covered, (2) the more common applicability of the full details of this phase, and (3) the desire of the author to use this

first step of the process as a simultaneous introduction into the wide world of national variations pertinent to N.P.P.)

Phase 2. Goal Formulation for National Physical Planning

Leonard Doob, in his book The Plans of Men, succinctly describes the general planning operation as "the discovery of means to achieve a goal for particular people in a specific environment."[34] This thesis is specifically focussed on physical planning. Therefore the goals discussed herein will be those of the national occupants for the reshaping of their physical environment. Each organized society has a hierarchy of goals, the most important being human/social goals. On this highest level are the discovery of means for survival, improvement and propagation of the species. The goals of physical environmental efficiency, amenity, and flexibility are located on a lower, yet still consequential stratum in this cultural hierarchy. The means used on this level (to achieve the environmental goal of unified national development) are comprehensive plans/policies for the regulation and arrangement of national land uses and occupancy.

"The most important thing about plans is the goals they seek to fulfill. The goals themselves, like the actions to be taken to make progress toward them, must in some way represent majority decisions if the plans are to be valid. So the planning profession must be in an advisory relationship to that majority -- which means to the part of the government that represents it. In drawing the organization chart, the planner must

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[34] P. 6, Leonard W. Doob, The Plans of Men (New Haven: Yale University Press, 1940).

never be put into a position to decide the goals for his planning. To contribute to a decision by analyzing consequences and posing realizable alternatives, yes. Even to exert the influence of strongly expressed convictions; this, indeed, is a professional duty rather than a mere right. But planning, and the planner, as a part of the structure of government, cannot assume authority without violating a fundamental principle."[35]

What are these national environmental goals, and how do the people select them? Before the professional physical planner can devise alternative physical plans for the guidance of future changes in the national spatial structure and landscape, he must know what direction the people have chosen for the growth and alterations of their environment. This is a question of public policy. The responsibility of goal formulation rests with the sovereignty of each individual citizen in the land. The responsibility of the planner in goal formulation is, as Howard puts it, to serve as the binoculars of the nation, "to raise its sights, to tell not only what is coming in the future, but also what might be coming and what might be made to come."[36]

The decisions on N.P.P. ends can be arrived at collectively, either by a straight popular vote on a specific issue, by the vote of the national legislature/parliament; or through other democratic procedures.

Listed below are some samples of national physical environmental goals:

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[35] P. 64, John T. Howard, "The Planner in a Democratic Society -- A Credo," Journal of the American Institute of Planners, (Spring-Summer, 1955). Cited hereafter as "Howard's Credo," 1955.

[36] P. 64, Howard's Notes - "Techniques I," 1958.

1. Most important is the whole question of intensity and distribution of population. The existing national pattern and its trends, as revealed by the survey and analysis phase, would publicly preface each of these questions.

   A. Do we (the people of this country) want conurbation coastal strip-cities 600 miles long, with nodes of high population density in residential concentrations of more than 250 people per acre?

   B. What are the possible alternative systems of cities that we could achieve within the limitations of our national resources? (One big city and the rest villages; or ten cities of a million inhabitants or other systems; and additional spatial elements, i.e. political dominance, etc., raised in the survey and analysis investigations.)

   C. Is it desirable to exercise national physical planning control over future urban growth (the types of possible control are discussed in the effectuation phase); and what will occur if we decide our policy is 'no control'?

   D. How far should we attempt to influence the geographical distribution of ourselves, the national population? (This whole issue has just recently been hastled out in the Netherlands, with interesting results. See their plans and implicit goals in Appendix A.)

2. Aside from land occupancy, there is the national question of land use and misuse. (Both a comprehensive and specific facet history should be publicly presented along with these queries.)

   A. How much farmland should be safeguarded, and for what crops? (This has been a vital issue from Israel; see her national goals in Appendix A.)

   B. What, if any, types of settlement should be allowed on flood plains?

   C. Should we reclaim any additional land from the desert or the seas, etc.? (All factors related to this basic question -- i.e. farm surpluses, lack of specific types of land, etc. -- should be shown in the survey and analysis.)

D. Is there a need for a national system of parks and reservations? (See Appendix B.)

3. Another area of N.P.P. goal formulation is regional development. (The linking of any one of these schemes - or those in Appendix B - to the comprehensive national physical plan and policies must be made clear.)

A. Would it be in the national interest to plan the development of hydroelectric power and related resources in a selected number of the country's underdeveloped river basins?

B. Would it promote to a more desirable distribution of economic activity if we drafted plans to open our inland waterways to direct navigation by ocean-going traffic?

C. Is it a good, long term investment to plan for the eventual industrialization of a majority of the country's geographic regions, including some of those presently backward and remote?

D. What is the most desirable pattern for major activity centers, considering the particular needs of the country?

There are certainly other N.P.P. goals; but these samples illustrate the point, except that a potential misunderstanding should be cleared up. It is intended that these national physical environmental goals not be thought of as isolated issues but rather as integral parts forming an official comprehensive national system of physical planning policy. Here is the true test of the N.P.P. agency. When constructing a particular timely series of goal alternatives, the agency has to be exceedingly careful to explain to the national decision makers the interactions of the policy choices to: (A) what has been agreed upon in the past, (B) the existing set of environmental features not necessarily up for immediate consideration and (C) the field of potential goal alternatives which will be pre-shaped by today's decisions and land commitments. It is the pro-

fessional physical planner who, as the binoculars of a country, directs the national vision toward future, achievable physical environments. The agency's responsibility is to objectively present a set of basically different alternative goals with the costs and benefits of each choice clearly documented. The people, and their elected representative government, will then select which of these new goals to insert within their continuously revised and enriched 'charter' of N.P.P. policy. Additional specifics of 'charter' making, and its relationship to plans, is dealt with in more detail in 'phase three.'

Many of the crucial goal questions might hinge on the difference between Appendix A and Appendix B (comprehensive planning vis-a-vis national 'facet' plans), e.g. can this country afford, financially and otherwise, to plan and construct new interregional circulation networks without simultaneously giving serious thought to planning the nation's land uses and activity centers? The N.P.P. agency must be devoted to comprehensiveness. The complicating factors of this position are discussed in phase three.

One of the difficulties in goal formulation is that environmental objectives and aims are usually written and it is difficult for the general public (who in the last analysis makes the decision) to mentally translate them into meaningful three dimensional environmental choices. Also, because these national goals are normally not stated in terms of spatial characters, while the specific proposals and plans to achieve these goals invariably are, it is confusing and arduous for the public to relate these environmental ends to concrete means. Therefore, it is compelling that the physical planner not only construct each goal choice

in crystal clear packages; he must also detail out the implications of each alternative, and the road that must be taken to achieve that aim.

To illustrate: the N.P.P. survey and analysis reveals that one city holds national dominance in all three major areas (political, cultural, and economic). The range of physical goals might be: (1) to continue this relationship, (2) to alter this by shifting the national capital (political dominance) to some other city, (3) to divide these dominances functionally among three major cities, or innumerable other combinations. Then the planner must go on to show the connection of each goal choice to the achievements of other agreed upon desirable social goals (i.e. (a) - increasing the national percentage of voters from 54% maybe 80%, (b) - a major shift in the national balance between urban and rural cultural values, (c) - a new trend toward lower birth rates, etc.), plus an explanation of the costs and other items necessary for the conversion of each goal into reality. The public, and the official national decision makers, cannot make wise selections unless the facts behind each alternative are explicitly clear. This is the job of the physical planner in the goal formulation phase.

Once major environmental goals are decided upon (and the planner has been careful to weed out conflicting objectives), they become national development policies. This 'charter' on N.P.P. policies is long range in its orientation, and therefore fairly permanent. In contrast the plans, or means, are more flexible and prone to continuous alteration. As a matter of fact, the formulated policies act as guides and checks on the future revisions and amendments to both the plans and their instruments for effectuation. This check and balance function is gone into in more

detail in phase four.

Phase 3. Making the National Physical Plans

The reason for making any plan is to achieve a designated end. Beyond goal fulfillment, the plan must also incorporate, at least, the essential characteristics of practicability and flexibility. For the sake of sketching in the rudimentary notion of N.P.P., this phase example will not produce a finished national plan (for that can only be done in the field), but will elucidate some of the factors important to the making of various types of plans.

First to explain the two registered essential criteria for physical plans. J. T. Howard has covered the topic amply when he says,

> "(A) Flexibility: to assure the maximum future range of choice when the unforeseeable happens (as it surely will). It is vital to realize the fluid character of land use over time; no matter what the target date, the plan drawings represent not the ultimate stage, but only a transition to something beyond; the planner must have some awareness of 'beyond' and whether the plan leads there, or is a dead end. The bigger the geographical area, the more complex the social and economic structure, or the more rapid the rate of change, the more need there is for flexibility, and the greater is the danger of fixity and finality.
>
> "(B) Practicability: The planner must see his way from now to the target date, and chart the course of plan effectuation. (A pliable criterion, depending on the nature of the plan -- whether a purely educational instrument or an official government document)."[37]

In the above quote, Howard mentions 'target date' a number of times. As a professional authority he succinctly explains the term, and three re-

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[37] P. 42, Howard's Notes - "Techniques I," 1958.

lated items in these words, "Target date (or dates): The selection of one or more times in the continuous future in which to crystallize the plan -- a necessary but artificial and potentially misleading step; choice of target date depends (for the given nation) upon: (1) the clearness of the future, (2) the definiteness of the goals, and (3) the methods at hand for effectuation."[38] The outlook of the national physical planner should be to plan for as much as can be accomplished by that date. This national physical plan making phase may be thought of as a never ending act, or performance, aimed at the constantly changing distant future, and incorporating many periodic, necessary fixations upon discernible moving targets.

On the city planning level the word 'plan' generally means a graphic drawing for the new city environment, as of a specific target date; plus a small body of written text describing such features as developmental and fiscal objectives, design standards for various components in the plan, etc. Now on the national scale, this term 'plan' is beginning to mean a document having a larger body of written text and a smaller number of graphic drawings. There seems to be a continuum ranging between the two extremes of the architectural or engineering drawings for the construction of one project, which have little written material, only the specifications -- to the development programs and proposals for reshaping the environment of a continental sized nation, which has little graphic material, only sketchy illustrations of the probable new national activity

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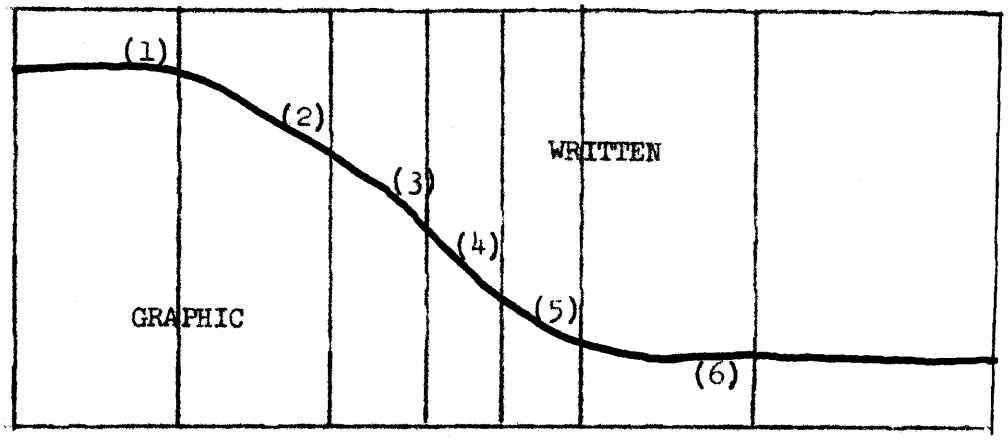
[38] P. 41, Howard's Notes - "Techniques I," 1958.

pattern and a few enlargement maps showing the highlights of scattered area schemes. This diagram of the 'plan continuum' should clarify the point:



(1) An architectural and/or engineering plan

(2) An urban renewal housing project plan

(3) A town or city plan

(4) A metropolitan area plan

(5) Either (a) a regional or state or provincial plan (within a continental-sized country) or (b) a national plan for a small-sized country

(6) A national physical plan (for a large-sized country)

This thesis, of course, is concerned with the character of the plans under numbers 5b and 6. The French national government has defined that character in these words, "It is clear that a national physical plan must be conceived in quite another form than those of municipal or regional plans; if, in a sense of simplification, the term 'national plan' is con-

venient, it must be understood as a planning policy and program within the official national framework."[39]

The question of national planning 'policy' has already been discussed in this thesis under the section on N.P.P. goal formulation. Just a summary of that (to establish the foundation for this phase on program making): the N.P.P. agency shares in the stage of policy formulation by furnishing the (a) survey facts, (b) analyses, (c) environmental goal alternatives, plus (d) professional judgments and opinions; but also important and highly significant is the special contribution of the comprehensive N.P.P. practitioner -- the synthesizing approach to policy formulation, ensuring consistency in both national purposes and governmental means; plus the planner's stress on establishing a system of policies for development and not merely a collection of guiding notions and principles.

This function of developmental policy formulation ('charter' making) will, in most countries, be handled by the national legislature or parliament, probably acting upon the suggestions forwarded from the national executive or prime minister; while the function of making the plans and programs to achieve these goals will most likely be a pure executive matter. This operation (comprehensive physical plan making) within the executive family is a difficult task, fraught with power politics and a strong drift toward 'facet' plans of each divided national ministry and

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[39]France, Communication du Ministre de la Reconstruction et de L'Urbanisme au Counseil des Ministres, Pour un Plan National D'Aménagement du Territoire (Paris, 1950).

operating agency. As the British 'Schuster Report' puts it, "The question of crucial importance is how to ensure a satisfactory synthesis of the separated (national) departmental responsibilities."[40]

Roland Greeley has pinpointed the problem when he states this observation (which almost seems to be a law of power politics) on inter-departmental cooperation in the plan making process: "The most secure operating agencies (e.g. major public works, etc.) are the least cooperative in the making of a comprehensive plan, because they fear they'll lose some of their present power and autonomy; while the unstable and new agencies (e.g. recreation, etc.) will invariably climb on the bandwagon, because they will gain status and certainly can not lose anything."[41]

This thesis will not be able to prescribe a pat remedy for this lack of governmental coordination, because solutions must be tailor-made to fit unique features in each country's political structure, plus fitting all the other indices of national differences discussed in the survey and analysis. Yet the thesis can discuss some of the alternative solutions that might be used by various nations (depending upon their individual needs at the time, etc.). Also, what can and will be prescribed at this point is the quality of agency performance desirable from whatever solution is adopted by each and any country.

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[40]Par. 44, United Kingdom, Report of the Committee on Qualification of Planners (London: His Majesty's Stationary Office, September 1950), Cmd. 8059.

[41]Class notes: "Course 4.56 - Regional Planning Seminar," Prof. Roland B. Greeley, Department of City and Regional Planning, Massachusetts Institute of Technology, Spring Term, 1959. Cited hereafter as Greeley's notes - "Regional Planning," 1959.

One of the largest factors in securing interdepartmental cooperation for plan making is the location of the N.P.P. agency. There is a wide, almost indeterminant, range of possible alternatives within the structure of any one nation's government. The existing pattern, however, is quite definite. In Puerto Rico, the comprehensive N.P.P. agency (Junta de Planification) is squarely in the domain of the chief executive: Oficina del Gobernador.[42] While the existing location of the Netherland's government physical planning service (Rijksdienst Voor Het Nationale Plan) is in the national ministry of reconstruction and housing.[43] And in Israel, the dominant official N.P.P. agency (Town and Country Planning Department) is situated in the central government's Ministry of the Interior.[44] This writer is aware of no other present-day N.P.P. agencies in operation. During part of the presidential term of Franklin D. Roosevelt (1930's to 1940's), an American agency (it had four different names -- suffice it to name only one: National Resources Planning Board) was located, during most of its existence, in what some observers have called 'The President's Pocket';[45] that is, the agency was not formally linked to the federal cabinet nor to the rest of the executive branch of government.

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[42]P. 49, Commonwealth of Puerto Rico, Bureau of Integrated Planning, Puerto Rico Planning Board, Comprehensive Regional Planning in Puerto Rico (Santurce: June, 1958).

[43]P. 32, "Planning in Holland," 1955.

[44]P. 27, K. H. Baruth, National Land Use Planning -- Israel, A Report to the International Congress for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954.

[45]Greeley's notes - "Regional Planning," 1959.

Alternative N.P.P. organizations -- (the adoption of any one is dependent upon the unique characteristics of each nation, its governmental officials, and its laws. Present day detailed examples of N.P.P. organizations for Puerto Rico, Israel, and the Netherlands can be seen in Appendix 'A'). (Every one of the evaluatory comments below must be prefaced with the word: perhaps?)

1) The planning department as part of a national ministry, with an 'advisory' board: (a) difficult location for coordinating the physical environmental operating agencies of the other ministries, (b) easily slips into only 'facet' planning for the few operating agencies within the same home ministry, (c) location not powerful enough to influence legislature and rest of executive branch, (d) 'advisory' board should be able to effectively reach the public (individuals and firms), (e) this organization may be the most a country can get in the beginning.

2) The planning department within a national ministry, and having an interministry standing committee: (a) is better than #1 for coordination, (b) will have greater tendency towards comprehensiveness, (c) can influence legislature/parliament through channels from a number of ministries, (d) to reach the public the standing committee must now depend upon the informational service of the entire executive branch, (e) might be more short-range oriented than #1, (f) complicates the role of the home minister.

3) A National Physical Planning Ministry: (a) will be long-range oriented, (b) stronger location than #1 for coordination, (c) seems to confuse staff function with line function, and may not be the best location to serve and advise other line function operating ministries, (d) probably, but not necessarily, weaker than #2 in influencing parliament.

4) A 'separate' N.P.P. board, related but not subordinate to either the chief executive or parliament: (a) may be viewed as an outside stranger, and hence generally ignored by both branches of the national government, (b) will be 'objective' and long-range, (c) closer to correct staff function than #3, (d) seems in weak position to deal with regional and local governments for effectuation phase, (e) good location for bringing matters of comprehensive planning to national public.

5) An N.P.P. board tied to the national legislature: (a) strongest influence on parliament, but this is a two way street, and the national plan could easily reflect the base of regional and partisan groups; hence surely losing its geographic comprehensiveness and objectivity, (b) could coordinate ministerial operating agencies through the allocation of funds, (c) not able to control the day to day crucial administrative decisions which effect so much of N.P.P., (d) maybe weakest branch of government.

6) A planning department within the prime minister's office: (a) usually strong coordination, it depends upon how autonomous each ministry is, and the same applies to individual operating agencies, (b) depending on political feelings of parliament, can influence that body properly, (c) prone to be short range and erratic in outlook, (d) may take up too much time of prime minister; or he may not be able to devote enough time to running the national physical planning show.

7) A 'separate' board served by department within prime minister's office: (a) better than #6 for disseminating the full range of planning information to the general public, (b) may be ignored by prime minister because it is not within his 'inner-office-family,' (c) may not be in a power bargaining position with either the legislature or the ministries, (d) will be more long-range than #6, (e) will relieve the prime minister of the administrative duties of running the wide range of N.P.P. operations, and hence allow him to worry about only the major issues.

8) A planning board within the prime minister's office: (a) more attuned to the sentiments of the public on planning matters, as expressed through their elected officials, than #7, (b) will be between #6 and #7 on short and long-range orientation, (c) good ministerial coordination, (d) the board can work with the legislature as the delegates of the prime minister, (e) maybe less objective than #7, (f) strong location for dealing with regional and local effectuation programs.

9) A new branch/division of entire national government; (i.e. in U.S.A. - Executive, Legislative, Judicial and 'Directional') (or in U.K. - Prime Minister, Parliament, and 'Planning'): very appealing idea, but its operational details are yet worked out by anyone -- presumably this 'directional' branch of government will include national economic planning, national social planning, etc. in addition to national physical planning. It is the author's feeling that no one really knows whether this novel approach will work well or not.

(Note - there are more organizational alternatives, plus variations on the

central theme of each of the above; but these have served as a rudimentary listing of possible governmental structures available for N.P.P. use).

So as not to give a misleading impression, that a paper-organizational-chart is the only element in this factor of governmental cooperation, the following on 'flesh and blood' is quoted, "It has been advocated more than once that the coordinating duties in the field of national physical planning should not be vested in a minister responsible at the same time for a specific facet of planning (as exists in the Netherlands), but in a minister with a more general attribution, if possible the prime minister. From the point of view of organization, this, no doubt, would be the best solution. Nevertheless, very much depends on the person of the minister, whatever his place in the organization. And, apart from this, as a rule, the attribution of ministerial portfolios is a matter of fresh consideration whenever a new national administration has to be formed."[46]

As to the quality of end performance from any one of these alternatives, Mr. J. Vink, Director of the Netherland's Government Physical Planning Service, has this to say on plan making, "The word (coordination) suggests that (N.P.P.) is only a matter of bringing different things together in an orderly way. One might think of a jigsaw puzzle. The whole picture exists; it is sufficient to find out how to join the given pieces in the right manner -- and there you are! In putting it like this, I think no justice is done to the real character of physical planning. There is

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[46]P. 58, J. Vink, National Land Use Planning - Netherlands, A Report to the International Congress for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954. Cited hereafter as "Vink Report to I.C.H.T.P.," 1954.

for the planner no such thing as a pre-existing picture of the whole; nor, indeed, will he always be able to fit every piece of interest in land-use wholly into its proper place. The trouble is, at least in so densely populated a country as the Netherlands, that the claims on land-use exceed nearly everywhere - and will exceed permanently, as far as one can see now - the possibilities our territory can afford. There is a shortage of land for agriculture, for recreation, for the Services; and nevertheless considerable amounts of land must be made available for housing, for industry, for traffic purposes, etc. Land-use planning is not only a matter of infinite patience, like sorting out the pieces of the puzzle. It is essentially a matter of well-considered weighing of all the interest at stake against each other and, above all, a creative achievement. The irreplaceable contribution of the planning side is the synthesis of the opposing interests into one harmonious whole, and, in so doing, the creation of a value exceeding the sum of the separate pieces."[47]

And, if a particular nation happens to have an official national economic and/or social, planning agency, it goes without saying that the N.P.P. department will work with them like hand and glove. There is an obvious overlapping of national economic plan-making and physical plan-making, as discussed earlier in the survey and analysis phase.

To be able to secure this synthesis, perhaps a solidly institutionalized 'general program' for governmental operations should be constructed. This would be a working outline for all national administrative agencies. Therefore, all ministries and bureaus dealing with facets of the physical

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[47]p. 57, "Vink Report to I.C.H.T.P.," 1954.

environment must be participating members in this making of a general program. That means the road department, the water resources agency, the recreation bureau, the agriculture department, the industrial location agency, the bureau of land reclamation, the management office of nationally owned territory, the housing agency, the electrical power board, and the numerous other official organs which deal with the physical environment. (See Appendices A and B for more examples.) Here is one of the many places in plan-making where the survey and analysis phase comes directly into play. Geologic, hydrologic, and physiographic data combines with sociological and economic information to provide an accurate and comprehensive base on which to build the 'general program.' The few dozen natural and social scientists mentioned in the survey and analysis phase, also make contributions to the plan-making phase. These employees of the N.P.P. agency work, on an interdepartmental technical level, with their counterparts in each of the other national bureaus. Of course, the ultimate along this line is to have a comprehensive physical planner within each specialized operating agency; in addition to having a civil engineer, an agricultural economist, etc., on the full time staff of the national comprehensive physical planning department.

Maybe the same techniques (i.e. a one year formal plan and a six year plan) used in developing official capital improvement programs could also apply here; only this specific plan is not oriented toward public funds, but focussed upon the administrative procedures, decisions and projects. This should be publicly approved as the 'one year administrative general program' by the National Cabinet and/or Prime Minister.

There is great need for N.P.P. techniques like the 'General Program'; for as Perloff says, "Especially difficult is the problem of devising effective means for gearing the many hundreds of individual governmental activities, as well as the thousands of decisions per annum on all levels of government, towards the achievement of the agreed upon desirable goals. It takes great ingenuity to construct these means through which the general aims of government can be translated into terms which have operational relevance, and which strongly guide those many administrative activities into projects which can most closely approximate that 'picture of the future environment' which is envisioned."[48]

Without such an N.P.P. 'general program' in the United Kingdom for example, the normally rational British government must witness the spectacle of two national agencies executing programs diametrically opposed to each other. The Town and Country Planning Department is pushing decentralization through its new towns, while the Board of Trade has pursued a course of action tending to foster centralization. Quite obviously national program left unchecked in this fashion only pit two public departments against each other. And then the national occupants (in this case the British taxpayers) are left with the dubious privilege of paying the bill for unnecessary administrative wars. The truly sad part is that one can find an army of these conflicting environmental programs and projects in most countries. The wasteful total must be legion!

Along with the N.P.P. general program it probably would be desirable to develop a coordinated national 'official' map, for that

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[48]P. 1, Harvey Perloff and Richard L. Meier, The Long Range Plan of Puerto Rican Governmental Activities, (Chicago: University of Chicago, 1955).

multitude of operating departments in the central government. This is the same type of official map used by local governments to openly proclaim their specific proposals for imminent public works construction. The only difference is one of scale, this would be a plan showing all the national public works scheduled across the country for the next few years. The national 'official map' will be officially adopted every two years by the Parliament, upon recommendation of the Prime Minister. The purpose of this N.P.P. tool is to produce a functionally harmonious and geographically comprehensive national plan for public construction. (Note: Of course, the N.P.P. agency will prepare all kinds of sketch plans for its own internal use.)

Beyond its relationship with central executive agencies, N.P.P. must play a vital and particular role for the hierarchical levels of local government. It must make a national planning 'framework' for urban, rural, and regional plans; not unlike the position of a city master plan guiding many individual neighborhood renewal project plans. The geographically larger framework shall hold the general planning principles and standards, while the smaller scaled plan (of the regional or local planning agency) adds its necessary refinements, and then translates these 'framework' standards into detailed land use arrangements suitable for each local environment.

About the question of how much work will be done at what level, very few generalizations can be made. This depends upon the unique characteristics, political and otherwise, of each nation. For example, in countries with Spanish political/legal backgrounds (like Puerto Rico) most of the work, including detailed regional plans, most probably will be

handled in the national capitol due to the tradition of weak local and powerful central governments. In lands with British legal histories, the opposite normally will be true, because of the tradition of strong local government. Still, in all cases there will be a minimum core framework of compulsory national planning standards and principles that each local government will incorporate into its own plans. The major important standards and principals will be formally adopted by Parliament, the remainder will be acknowledged administrative decisions.

It is the personal feeling of this author that N.P.P. is at the same stage of development as city planning was in the early days of Bassett. That is, this legal planner, when drafting his treatise on the urban master plan, dwelt mostly upon the role of planning as a guide for public buildings, roads, utilities, and the like. Bassett spent very little time, in fact he almost deliberately excluded, the issue of municipal planning as a guide for private land development. In reading the contemporary professional journals, this author senses a similar preoccupation with the coordination of national public activities and a blind spot as far as N.P.P.'s efforts toward channelizing private environmental activities.

Under the national physical planning process, as crystallized in this thesis, private development would have to adhere to the 'charter of policies,' officially ratified by Parliament. In other words, the 'N.P.P. Charter' (which is publicly voted periodically on by either the national citizenry or legislature, or both) is legally binding upon the agencies of the central government, local agencies, and private developers as well.

Although generally, the private developer will more often feel the influence of the local plans in his immediate area, because of their more detailed and specific nature.

To summarize the plan-making phase of N.P.P., after national goals have been formulated and the charter of policy constructed, three types of plans need to be made: (1) the general program to synthesize the administrative operations of the central government to assure compliance as effective means toward the 'charter,' (2) the national official map to harmonize public works projects in order to fulfill the goals behind the 'charter' and (3) the national framework setting down planning standards, and principles to guarantee that local governments will control development in their areas along the lines laid down within the national 'charter.' Hence, it is evident that phase two - charter formulation (the selection of major environmental goals for the country) is the place in this plan-making process where the overall national physical pattern is decided.

Phase 4. Effectuating the National Physical Plans

> (Note: The author must preface this section by stating his limitation of only being truly familiar with American law. Therefore, implementation methods that might be suitable under another land's law might be inadvertently overlooked in this short discussion.)

Since land development is the manner in which the bulk of the physical environment is changed, N.P.P. can be implemented only if it has some forms of control over major development projects. In some countries, projects are almost entirely in public hands, while in others the opposite

is true. Most nations have a position somewhere between these two poles. The balance between public and private building may also vary from time to time. As this thesis has established the concept of comprehensive N.P.P., all methods of environment development must be consistent to the law and goals of the land as expressed in the 'charter of policy.'

The forms of possible national control over public and private physical development are many. To mention a number of methods for controlling public development first. Money is crucial to all government agencies, especially those in public works, and generally this life blood is regulated through one central office -- the budget department in the chief executive's office. This fiscal department normally makes a proposed operating budget for the ensuing year and submits it to the national parliament for revision and approval. The proposed budget is categorized into sums for national defense, social welfare, foreign aid, public works, agricultural aid, etc. Clearly not all the classifications bear relationship to the country's physical environment; but many times important items and puzzling policies are hidden within large categories. Take the whole issue of agricultural funds and its multi-sided impact on the national landscape. The budget department is a strategic control valve for N.P.P. purposes and the national charter of policy plays an important role in the regulation of funds.

Hopefully, the national physical planning agency can establish a strong long range capital improvement program. Many nations have already had capital improvement budgets for years, even without an N.P.P. department. France started the practice in 1860; the Scandinavian

countries began in 1901 and Britain has had it since 1910.[49] The national long range (20 year?) fiscal program for capital improvements land acquisitions and public works is certainly in the domain of the planning agency. In fact, the N.P.P. department should strive to have the basic goals behind their long range capital improvement program voted into the national 'charter' of policy.

The short range (4-8 year) and immediate range (next year) capital improvement program most likely belongs to the generally sophisticated national bureau of the budget. The short range program can act as a solid, common meeting ground between the physical planners and their twenty-year goals, and the fiscal planners, and their next year's worries. This short range fiscal proposal should be interlocked with the planning agency's and national cabinet's 'general program' for administrative procedures, decisions and operations, but need not necessarily cover identical topics. The budget department in making the short range capital improvement program will call for the expert judgment and survey facts of the physical planner, just as he, when making the twenty-year proposal, will call upon the opinions and data of the budget office. When reviewing regular requests for the next year's national budget, the fiscal officer will utilize the cabinet's 'general program,' On unusual matters the planner might be called in. When the national legislature officially examines, revises, and passes the central government's budget for the next fiscal year, it will use its own long range 'charter' as a guide on funds related to the physical environment. After the funds are

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[49] Howard's Notes - "Techniques I," 1958.

authorized the ''official map' tends to control the ways the operating agencies actually spend the public tax revenues and acts as a means of fulfilling the plan. Also the N.P.P. agency should have full powers of 'mandatory referral;' but, of course, the veto is still in the hands of the higher national decision makers.

Money is also important to the various levels of local government; especially funds from the central government earmarked for some facet of the physical environment. These grant-in-aid 'carrots' are also strategic instruments for the carrying out of the national plan. N.P.P. controls them in two ways. First, the 'charter' serves as an implementing technique on the parliament, setting the bounds within which it can delegate revenues to the local governments. Secondly, the 'national framework' will certainly be an indirect check on the methods employed by the local units in the expenditure of the funds. Features such as the timber performance standard, mentioned in the survey and analysis, would hence be insured.

Law will have to be the controlling force over private developers. This generally will be regional regulations and local ordinances. Beyond local subdivision control, one of the principles in the national framework will be the establishment of major regional land development controls (both urban and rural). Probably to induce the regions to set this up, a 'carrot' with money bags tied to it will be held out from the national capitol. This control of development, local and particularly regional, will be geared to the general directions of the national 'policy charter,' and will be in tune with the amount, the location, the timing, and the quality of development broadly recommended for that subnational area.

This means, of course, that the region's representatives in the national government have tried their hardest to shape the charter to fit their region's environmental aspirations into the dominant national overall goals and policies. Also the implementation of the regional development controls are in the hands of regional government. The private individual may appeal the regional administrative decisions to a higher court. The court will use the national 'charter,' plus the N.P.P. survey and analysis information, to assist it while deliberating the case.

As for zoning, here again some form of regional regulations to influence and control location and intensity of land uses will be encouraged via the principles of the 'national framework.' Also this will be geared into the general directions of the national 'charter' and adjudicated by the courts. Performance standards for regional zones (especially in rural areas) will be influenced by the broad designs within the national 'framework.'

Other tools for N.P.P. effectuation are: (A) the techniques of managing nationally owned public land -- this influences a large number of the neighboring private land owners; (B) taxation on land and on other factors which channelize growth into the desired areas via regional differentiations; and (C) governmental regulation of such things as transportation rates, etc., to foster development in specific zones.

If the implementation of national physical planning is to be effective, it must permeate the entire national government. To do this national physical planning must become pllitical, and must realize that it will suffer defeats along with wins. Compromise is the essence of government, and will also be the reality of planning. N.P.P. must under-

stand that to be effective and have strong allies, it must 'accommodate' both the legislature and the officials of the executive branch. But always the N.P.P. agency must uphold the crucial interests of the public against the stresses and strains of special lobby groups. In other words, N.P.P. must touch the decisions and activities at every level in the executive branch, plus receive broad and clear policy support from the legislative and be upheld with dignity by the judicial branch.

CHAPTER III

CONCLUSIONS

This last chapter of the thesis will cover six points: (1) a concluding idea about how to analyze the forces tending to create N.P.P.; (2) a discussion on some of the hypothetical problems that face N.P.P.; (3) samples of future areas needing additional research and/or new ideas; (4) concluding comments about the four phases of the N.P.P. process; (5) conclusions about the introductory criteria for a worthwhile and useable concept and (6) a final word about national physical planning and international harmony.

In the early part of the thesis body and throughout both the appendices, many factors, seemingly causes of national 'facet' plans and comprehensive N.P.P., were discussed in length (i.e. the incidence of new land, loss of national territory, population migration, technological advance or obsolescence, popular rush to raise per capita income, high density and unbalanced distributions of population, etc.). This writer has a hunch that there are a few volatile combinations of casual factors, which when mixed, will/might set off a reaction, and produce a full-fledged comprehensive N.P.P. operation. It seems that there is not yet enough information, nor has the existing N.P.P. data been exhaustively analyzed, to result in valid preliminary theories. The author can, however, offer a suggestion on how a future analysis might be run. A major difficulty is the large number of variables occurring in each country, plus the equally large number of countries experiencing facets of compre-

hensive N.P.P. Therefore, a method which might ease the handling of all these factors, and at the same time possibly reveal their interrelationships across the board, would be a two-dimensional matrix. A simple illustration of this is given below.

Netherlands	Israel	Puerto Rico	U.S.A.	France	Canada	W. Germany	U.S.S.R.	
								Country Size
								Total Population
								Average National Density
								Annual Rate of Population Growth
								Per Capita Income
								% Labor Force in Manufacturing
								Climatological Zone -(plus other ratings and international classifications)

Then these variables should be cross checked against the existing stage of facet plans, or full N.P.P., possessed by each nation listed in the matrix. The degree of causality for each variable should be calculated, if possible; and highly important is the particular combination

of variables which seem most prone towards creating the "need for N.P.P." in the minds of the voters.

If this thesis is to be a responsible contribution, it cannot leave the crystallized concept up in the air. It must evaluate the difficulties likely to confront this process, such as the problem of even establishing national physical planning, and attempt to be frank in discussing these hypothetical problems.

Shortages of personnel could be held up as a reason not to adopt N.P.P. There is both a lack of physical planners trained for national scale, and a lack of other technicians familiar with the relationship of N.P.P. to their specialized field (i.e. economists, public administrators, sociologists, civil engineers, etc.). This was brought out in the discussion on schools and graduate programs in the opening pages of the introduction. Yet the practicing physical planners who have considered this problem, cinclude, as only one can in a pioneering field, that learning about N.P.P. will come from the doing.

Certainly there will be organized and unorganized resistances to establishing N.P.P. Some will always object because their interests, customs, traditions, and/or privileges will be affected. These attempts to block N.P.P. might come from: (A) major cartels, professional institutions, and other big organizations; (B) ideological groups of public opinion, e.g. a religious sect might fear an intellectual conflict on its theologic policy, such as birth control; segments of the American society might feel N.P.P. is 'bad' because it possibly sounds like socialism, etc.; and (C) as was discussed in the effectuation phase - politicians or adminis-

trators who feel they will lose some power with the coming of N.P.P. - because, as Chapin demonstrates the conclusion, that the more sound sociological, or other social science research findings, the greater the likelihood that it will expose vested interests, or challenge social inertia, and therefore be resisted."[50]

National physical planning will not be a painless panacea. There will be frictions with other governmental agencies, both national and subnational. On the national scene, N.P.P. could possibly have difficulties with other staff agencies (i.e. economic or social planning, budget people). The hypothetical problems with line agencies might be of two types. First, program disputes with cabinet departments on the effect of a comprehensive outlook on the departments sector (e.g. agriculture department). And second, friction with public works agencies who don't want the N.P.P. program telling them what and where to build, etc. The subnational problems will be either regional or urban. The N.P.P. agency might propose the redistricting of a subnational political unit for a more rational pattern (i.e. dissolving the 48 continental states and establishing a dozen regions). Or the national physical planning program might be bucking the trend to the central/primate city in favor of a more evenly distributed population.

In addition to intergovernmental problems, there will be those between the N.P.P. agency and private groups (i.e. the debate over public or private hydroelectric companies, control of use of limited natural resources and fuels).

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[50]Pp. 7-12, F. S. Chapin, "Social Obstacles to the Acceptance of Existing Social Science Knowledge," Social Forces, 26, (October, 1947).

Another difficulty confronting this new proposal is the general lack of knowledge about the topic. N.P.P. is still very clearly in the embryonic stage. There is only limited experience with it, and very little research on N.P.P. But one doesn't find out how something operates until it is allowed to function and then observations and experiments can occur. All new national physical planning agencies should take it upon themselves to carefully collect data about their performance during the first few years, to be able to assist in establishing additional N.P.P. programs on the basis of the documentary proof of the 'before' and 'after' situations.

A last general area of hypothetical operational problem is the chance of costly mistakes. This could happen because of the present inadequate body of knowledge and research on N.P.P., coupled with the usual administrative demands for quick decisions.

One outstanding area needing additional thinking and new research is how to best standardize national physical planning survey data into common, international measurable units. A corollary of that is the question: 'what' should so be treated. What are the variables common to all countries, and those strategic to global contrasts? An example of the kind of figure that should be internationally standardized is the 'real national average density' (i.e. the number of people per arable or inhabitable square mile). Of course, the difficulty is what is the criteria for a square mile non-arable or uninhabitable, and is the criteria realistically consistent for tropical countries, deserts, Arctic wastes, mountainous regions, etc.?

The whole question of a proper, effective, and acceptable areal division of political powers (especially for regions within large sized

countries) is ripe for research. Comprehensive physical planning cannot happen unless the government, of which it is a part, has a full grant of general comprehensive political power. Much of the carrying out of N.P.P. is via these subnational regions. The solution of this political problem will certainly assist the establishment, or operation, of national physical planning in countries of this scale.

A third sample research topic is whether the comprehensive 'master plan' as it is conceived of in urban planning , can make any contribution to the integration of private and public land developments on the national level. A different matter, vital to comprehensiveness, is the accurate study of all national governments not now possessing N.P.P. to expose the true financial and social costs and possible benefits, if any, from conflicting and misguided developmental policies.

A concluding topic is the investigation, research and new thinking necessary for laudatory national goal formulation. What are the best techniques for the physical planner to use when explaining to the national population and its governmental representatives, the three environmental directions stated by Howard: what <u>is</u> coming, what <u>might</u> come, and what could be <u>made</u> to come? This involves more knowledge about public opinion, its attitudes towards the physical environment, and public opinion's capacity for change. It stands to reason that the national occupants cannot make truly valid policy decisions until they are aware of the <u>full</u> range of goals. And without this valid selection of policies, the 'charter,' which should be the basic instrument of N.P.P., is only a weak flicker in the night instead of a strong guiding light.

These samples of needed research areas are only beginnings. A complete and thorough excavation into all aspects of N.P.P. is essential, and this should be done before any hit-and-miss program is started. In other words, the most vital and timely research topic is to find out (A) all the areas which need future research, then (B) establish priorities on what to explore first, (C) who will do these investigations, and (D) how the findings will be made public for all to check and utilize.

One of the most striking conclusions one can draw about the four phases process of national physical planning is the large number of fragmentary features already in existence. For the survey and analysis phase most countries of the world have already a population census bureau, a geologic and hydraulic survey branch, a meteorologic and weather bureau, a labor statistics office, a soils survey department, an agriculture and/or forestry investory service, plus other assorted data collecting agencies.

As far as this writer knows, no country happens to have yet compiled a complete document resembling the 'charter of policies' (as described in the goal formulation phase); not even the three lands already operating comprehensive N.P.P. However, the vast majority of national governments do possess thousands of policies concerning their physical environment which are explicitly stated in recent and ancient legislation, plus the fact that they operate with an indeterminant amount of hidden and implicit physical planning goals. The United States N.R.P.B. in the 1930's did a great service in beginning this public compilation of national goals; but it was not kept up nor developed further.

Probably the plan-making phase has the most surprising number of existing fragments. Its composition features scattered agencies, very similar to the survey and analysis illustration above. Appendix B is devoted to describing over forty examples of these individual facet plans and the writer was selective in this process. More than twenty countries are represented in that compilation of fragmentary national physical plan making. Some of the pieces of the physical environment which many countries are working on are: national highway plan, national irrigation scheme, national land reclamation plans, national urban renewal programs, national rural resettlement plans, national airport scheme, and so on, right down the list.

There are as many tools for effectuation as there are individual fragmentary national physical plans. This fact was rather startling for the author to realize. In addition a unique body of implementation techniques exists within the three lands now operating comprehensive N.P.P. Perhaps none of them could be called twin brothers to the effectuation phase as described in this thesis, but that's unimportant. The positive factor is that all over the world, parts of N.P.P. are being carried out every day. These tools for effectuation control both a wide spectrum of governmental agencies dealing with the physical environment, and a large number of private individuals and groups whose actions have land implications.

The obvious corollary conclusion from this large number of existing examples, must be that the majority of the world's N.P.P. operations are still fragmented, and not comprehensive, neither geographical nor functionally. To bring these national physical planning operations up to a

desirable level of performance, will demand much effort. Most of this work should be directed at discovering methods for effectively converting governmental organization. After these structural conversion methods are known, a promotion job seems in order.

Selling the idea of N.P.P. has not been the objective of this thesis. The purpose behind these pages has been to systematically develop the details of the idea, thereby providing a crystallized concept for whomever will be engaged in the act of selling N.P.P. to a particular government and people occupying a specific environment.

Yet the thesis has a responsibility to, at least rudimentarily, demonstrate the organizational contents of N.P.P. So as not to be second-guessing any of the future converted governmental structures, only elements of one phase will be discussed. To apply the academic description of survey and analysis into a live and workable functioning unit, almost requires a detailed office breakdown. Even though much attention will be payed to the organizational departments operating in the national survey and analysis office, the intention is to demonstrate the functions which should go on in such a place, rather than holding thisout as a governmental office model for all to copy.

Much of the data necessary for this phase of the national physical planning process is gathered by the central government. The difficulties are many, however. The facts and figures are collected by all the assorted separate agencies listed a few pages back in this thesis conclusion, plus those <u>not</u> dealing with the physical aspects and many more. Some are directly tied to operating agencies, while some just find an empty spot in the organization chart and set up shop. Each autonomous group keeps

its records in its own peculiar way and only investigates what it thinks fit and proper. One wonders why all these cannot be combined into one co-ordinated data collecting and information bureau for the national government. This would become the central census and statistical reference bureau. It would feed information to all public agencies and others needing specific types of background and operating data. And its classification system should tie in with international statistical agencies like those of the United Nations.

If such a proposal lacks support, then at least an information bureau for data related to the country's physical planning should be established or anyway some sort of centralized co-ordinating machinery over this particular field of survey and analytical material. Perhaps the data agency would even have its own library and archives concerning the national physical environment, its occupants, and their utilization of the land. This would mean pulling together the population census bureau, the geologic survey group, the weather bureau, the labor statistics office, and so on. The earlier description of the survey and analysis phase listed over thirty types of specialized experts to assist in this data-collecting team effort. They were natural scientists, social scientists and many others. This central census bureau on the physical environment will also compile information from all the local agencies across the land. Next, it will proceed to investigate all geographic gaps in coverage by its own experts. Then the facts and figures relevant to national physical planning on all levels, geographically and functionally, will be standardized and recorded in a classification system; maybe something like I.B.M. computer tapes or a card catalogue, plus a huge map collection, etc.

This survey and analysis data will be in forms ready for easy application, and not for dust gathering. The exact means of organizational attachment to the planning agency is unclear, but the operational performance for this census bureau is to act as a ready, willing, and intelligent servant to the national physical planning department. Beyond this, this information service agency must be prepared to give any and all kinds of specialized material to each central government operating agency which works on the physical environment. Also service to the general public and special organizations is desirable.

After the initial comprehensive survey and analysis of the country's physical environment, some segments will only need periodic revisions. This is especially true for the data relevant to all global comparisons. These can be brought up to date every ten years after each nation has completed its domestic census for that decade.

The material supplied to the N.P.P. agency should fully demonstrate the present environmental limitations, pressures, and potentials, plus projections for the future of all elements having implications on N.P.P. In other words, the survey and anlysis information should be future oriented, multiple facet synthesized, and geared for change. Also the national physical planning agency will request intermittent feedback surveys on its entire operations. These will include an objective analysis of the plan making stage, goal formulation, and effectuation of plans. These reports will evaluate the directness of means and techniques in their path toward goal fulfillment, and whether the program is still in the right direction. The N.P.P. agency then will utilize these analyses

to overhaul its machinery. For example, it might tighten or loosen its effectuation system of interlocking checks and balances, depending on how things are functioning. The same feedback and operational control mechanism would presumably check and re-orient all other phases of the national planning process.

This rudimentary demonstration of the organizational contents of survey and analysis must still obviously be viewed through the eyes of each specific national government, and its own human and structural peculiarities and quirks. The same would apply, even more so, to the other three phases described in the thesis main body.

Now to conclude whether the thesis has satisfied the criteria set forth in the introduction for a worthwhile and useable concept. The first criterion was that the problem discussed should be of interest and certainly of importance. The interesting feature of national physical planning is the neglect that it has received from the planning profession, from national governments, and the lay public. This is especially more noticeable because the contention of this thesis is that the process of national scale physical planning is identical to the four-phased process of physical planning on the urban or regional scale. The importance of the topic is its significant effect on the possible achievement of some of man's fundamental objectives. The understanding of human needs is the very basis of, and reason for, planning. People are the underlying and basic reason any planning is undertaken; and the professional practitioner of N.P.P. hopes that in a modest way his share of the planning can contribute a little to the preservation of human existence. The thesis has

hopefully crystallized a neglected concept to assist this planning practitioner in achieving his goal.

The second criterion was that the subject be fairly universal. It is the detailed process of N.P.P. which could be universally applied to all 'free' and 'democratic' nations. While such subjects as the N.P.P. agency's governmental location, etc., are not susceptible to generalizations, and its details should only be seriously examined within the specific context of each country's unique organizational framework.

The third criterion was that the problem be capable of being tested and recorded. The thesis has hopefully been successful in presenting the four phases of the N.P.P. process in such detail that any physical planner could test the concept out within any actual physical environment. And the completion of the many techniques (i.e. 'charter,' 'survey global frame of reference,' 'general program,' etc.) should provide an adequate record for any real life test run.

The fourth criterion was that the thesis concept be significant at its designated national scale. The details of the process, as herein presented, are directed at showing those variations among nations which have implications to physical planning, plus those operational features of goal formulation, effectuation and plan making which are significantly national in their official character.

And the last criterion was that the topic be comprehensive in its inclusion of factors of the physical environment; and that it be true to the planning profession, by focussing on the critical element of being prepared to rationally change that physical environment. All the author can say on this criterion is that the entire tone of the thesis was designed

in this manner, and hopefully it has permeated every page.

Before closing, a final work on the nationalistic aspects of N.P.P. vis-a-vis the quest for international harmony seems fitting. Probably the best way to evaluate this final element is to observe the performance of the three nations now possessing operating N.P.P. agencies.

In the state of Israel, the difference between the technical side of physical planning and the political overtones are very evident. One could say that all areas of Israel planning activities reflect the central government's strong overall nationalistic policies. This is especially true when the issue of physical territory is brought up. To cite just one example: The central government posed the plans, and are now completing the construction of a huge dramatic irrigation canal, which diverts international water (belonging to three Arab countries and Israel) from the north and drains it through the entire length of the country, thus making only the Jewish section of the desert bloom. This can cause difficulties between national neighbors, especially since there were so many other possible technical solutions (e.g. the J.V.A. Plan, the Johnson plan for joint Arab-Jew cooperation on irrigating the Jordan River Valley, etc.).[51]

But this doesn't necessarily mean that N.P.P. is an instrument of nationalism. In Puerto Rico for example, N.P.P. has served more as an instrument of international cooperation, especially among the Americans;

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[51]David A. Jokinen and Frank Vigier, "An Evaluation of National Physical Planning in Israel" (An unpublished paper for the graduate seminar on "Land Use Problems in Developing Areas," Department of City and Regional Planning, Massachusetts Institute of Technology, Fall Term, 1958).

and also it is serving as a physical planning training ground for technicians for developing areas all across the world. To give a live feeling for this tone of global harmony, let Governor Luis Muñoz Marín say it himself, "(Physical) planning is close to our heart, especially planning to meet the needs of Puerto Rico, and those sister countries of this hemisphere with which we share common heritage and common aspirations. We are greatly honored to sponsor, with the United Nations and the Organization of American States, this international seminar on the training for town and country planning, and to be chosen to provide its site."[52] (San Juan, March, 1956).

Also to deepen this tone, Mr. Candido Oliveras, Chairman of the Puerto Rico Planning Board, will be quoted at this same occasion, "Because of our free association with the United States on one hand, and our Spanish traditions and culture on the other, we in Puerto Rico feel that we have an opportunity and obligation to play a unique role in the western hemisphere. That role is to serve as a bridge of understanding between north and south -- between Latin America on the one hand and the United States and Canada on the other. Thus, if your being here, all of you, can serve as a token payment on that commitment, this seminar will have been to us particularly gratifying."[53]

As for the third country, it also casts its vote for international harmony and N.P.P. to share its responsibility in that direction. "A start

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[52] P. 2, "U.N. Bulletin #11, Training for Planning," 1957.

[53] P. 14, "U.N. Bulletin #11, Training for Planning," 1957.

has already been made. In 1952, the ministers entrusted with physical planning in the three Benelux countries, established a joint committee for these problems (the Netherlands National Physical Planning Service, in The Hague, acting as the permanent secretariat). This committee will make a comparative study of the (A) legislation, (B) of the planning research methods, and (C) of the planning methods themselves; while every effort will be made to ensure that the planning activities of the three countries are more closely attuned to one another.

"The Committee commenced by compiling a comparative statement of the legal terms relating to planning, and by making a study of the planning symbols from the point of view of possible greater uniformity. Also undertaken has been an investigation of the (1) problems of physical development in the Netherlands -- Belgian frontier area; and (2) of the planning aspects of Benelux tourism.

"But all this is only a beginning. As economic co-operation in Western Europe proceeds, Western Durope planning problems will become more and more clearly defined. What is achieved in the economic sector is bound to be reflected in physical development, thus on the map of Europe; on the other hand measures in the sphere of physical planning will in many respects condition the success of economic ideas. The Netherlands will be overjoyed if this aspect of the international co-operation is soon given the attention that it deserves."[54]

So in conclusion, one might hope that soon people will be able to say that national physical planning (as a vitalized, worthwhile and useable

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[54]P. 31, "Planning in Holland," 1955.

subdivision of regional planning) is the art and science of anticipating and arranging the use of land to assure the best international conditions of economy, health, amenity, and global human occupation. Or as Sir William Holford says in these parting words:

> "Considered as an adventure, a discipline, or a social service, few vocations are as valuable as regional (physical) planning. It is true that its main work is based on foundations laid by others -- by explorers, scientists, and pioneers; Everest is climbed, the oceans navigated (on the surface and under it), and the forests of the Amazon and the Congo are penetrated, by a different kind of intelligence and a different kind of endurance from that which must be possessed by the regional planners. Their rewards also are slower and less spectacular, and there is less personal identification with successor failure. Nevertheless, the goal is just as high; it is nothing less than the building up of a higher and finer stage of civilization."[55]

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[55] P. 51, "U.N. Bulletin #11, Training for Planning," 1957.

APPENDIX A.

Case Descriptions of Three Existing National Comprehensive Physical Planning Operations

Preface to Appendix A: This appendix on 'comprehensive' planning is the direct opposite of Appendix B, with its own illustrative case histories on non-comprehensive national physical planning. To distinguish between the two, the illustrations in Appendix B have been called 'facet' plans, signifying their fragmentary character and incompleteness.

The United Kingdom is a country in point. Professor Patrick Abercrombie laments the crucial difference between Appendix A and Appendix B when he says, "There has been no inconsiderable amount of planning on a national basis in this country (United Kingdom); but its characteristic, and not very satisfactory feature, consists in the fact that it has been carried out almost wholly in water-tight compartments. The achievement in each direction may be great and satisfactory, but there has been no consistent attempt to weld them together into a single (comprehensive national) plan..."[1A] A large number of these British national 'compartmentalized' physical plans can be found among the pages of Appendix B.

Another country which does not qualify as 'comprehensive' and therefore must remain in Appendix B is the Union of South Africa. A

[1A] P. 45, Professor Patrick Abercrombie, National and Regional Planning in Great Britain, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937,

professional planner, who has examined this distinction within the specific context of his land, ruefully relates that "... the term 'national planning' has been taken to mean the planning and control, on a national basis, of the use and development of land; of public services connected therewith, i.e. transport, water supply, etc.; and the preservation of large areas in the form of national parks or game reserves. In the Union of South Africa, although many of these matters are subject to national control, they are not, as yet, sufficiently co-ordinated to merit description, in the aggregate, as a national plan."[2A]

Sir Raymond Unwin further emphasizes the vital distinction between comprehensive and not; he wouldn't even use the modifier 'planning' to describe the examples in Appendix B. "A tendency appears... to regard the formulation of programmes, or the execution of schemes dealing with individual types of activity -- as deserving to be called national planning, because they are on a national scale. Contributions to a plan they may be, but if they are dealt with separately and not co-ordinated in a unified concept and a plan embracing them all -- the treatment of them separately does not become 'planning' solely because the scale is national."[3A]

[2A] P. 84, F. Longstreth Thompson, National and Regional Planning in the Union of South Africa, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937.

[3A] P. 96, Sir Raymond Unwin, General Report, Summary of the Papers Delivered to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937.

These three quotes have demanded that N.P.P. be functionally comprehensive. There is another requirement which must be satisfied before a country can truly qualify as having a national comprehensive physical planning operation. That is complete geographic coverage by its program, meaning not only planning for the national capital district, or the main urban concentrations, but viewing the entire national territory as one physical planning unit.

To fill in this geographic point, and to also present a brief documented history of the national physical planning concept, it will be interesting to quote an old report by the Netherlands Planning Institute:

> "It is a striking feature of the development of physical planning that the unit, which it tries to embrace in a planning scheme, is becoming larger and larger. This remarkable process reflects itself in the subjects dealt with at the international congresses of our federation. At the Amsterdam Congress of 1924, the question of 'regional' planning was raised for the first time; and more than one paper was devoted to showing the necessity of planning a region as a whole, instead of restricting the planning activities within the casual boundaries of one municipality. But the conception of regional planning was not then dissociated from that of the town plan, for at the root of it was the need of planning the large urban centers with the surrounding countryside.
>
> At the Paris Congress of 1937, only thirteen years later, regional planning in its turn is subordinated to the larger conception of planning an entire nation's territory. In the short period between these two congresses, the idea of regional planning, even apart from the original sphere of influence of the large towns, has been accepted and put into practice in many countries -- and the foremost ones are not preparing for the next step, leading to the state physical plan or 'national' plan."[4A]

[4A] p. 51, Nederlandsch Instituut Voor Volkshuisvesting en Stedebow, National and Regional Planning in Holland, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937.

To bring this short introductory history of national physical planning right up to date, the author would like to add that at the Edinburgh Congress of 1954, only seventeen additional years later, 'regional' was omitted altogether from the title, and 'national land use planning' was considered an independent professional topic on its own right. In the short period between the thirties and today, the idea of national physical planning, even apart from the original sphere of influence of the region, has been accepted and put into practice (as predicted) in many countries.

A few of the national physical planning programs were perhaps born only to suffer premature deaths, as probably was the situation in the earlier days of regional planning. However, the writer is only familiar with one such fate, occurring during the late 1930's and early 1940's to the American National Resources Planning Board. Yet, maybe there were others.

Six countries presented reports to the 1954 Congress on the status of national land use planning in their homeland. Two proud countries reported that for some time they have been operating national physical planning programs that are comprehensive both functionally and geographically; Israel's program began back in 1948, and the Netherlands instituted her agency in 1941. If Puerto Rico had attended the Edinburgh Congress, that commonwealth could also have stood up and been counted as a pioneer for her operations dated back to 1942.

This appendix is not presenting these case descriptions on Puerto Rico, Israel and the Netherlands because they have reached the ideal N.P.P. position. Far from it, each has many weak spots in their present organizations. However, these three countries have all achieved levels of operating success with national comprehensive physical planning well

worth examining at this point in the development of N.P.P. concept. Many of the topics treated in academic detail in the main body of the thesis are live, functioning parts of the N.P.P. machinery in one or another of these three lands. Although not one of them yet happens to possess all the topics developed by the thesis in its conceptual model of the national physical planning process.

It goes without saying that the following short case discussions cannot do full justice to the commendable N.P.P. operations in each of these countries. The intent of this appendix is not to be all embracing, but rather to detail out a number of selected points (developed in the thesis conceptual model) and now found in actual day to day operation in one or more of these pioneering countries.

One last comment before ending this preface. This appendix has been limited by two main restrictions: one, the bulk of the professional literature and journals cite only official government information, hence there is not enough conflict in technical opinions and data from neutral sources to guarantee objectivity in the raw information material; two, the writer has only visited one of these countries, and that unfortunately was not on professional planning business. Such are the limitations.

1. Puerto Rico

Political Structure -- This 'provincial' sized island enjoys a unique political relationship with the United States. She is neither a

dependent, nor can she claim to be an absolutely independent country. Previous to the new 'commonwealth' status, Puerto Rico was a territorial possession of the U.S.A., not unlike Hawaii and Alaska before they achieved statehood. Today, as a commonwealth, Puerto Rico has her own self government. The United States shares with the insular government: common currency (U.S. dollar), common foreign policy (U.S. State Department), common high court (U.S. Supreme Court), a mutually open and free population migration policy, plus various and sundry other legal features. Because the Puerto Rican commonwealth has no voting representatives in Washington, D.C., her citizens do not pay federal taxes. Yet, the island inhabitants are fortunate in being recipients of many of the U.S. federal to state grant-in-aid programs, e.g. urban renewal, public housing, etc. This present commonwealth status is the result of a very unique constitution drafted by Puerto Rican statesmen, coupled with a voluntary association with the United States government. A Puerto Rican friend of this writer, who is also a physical planner, calls this the 'uncommon compact between the ant and the elephant.'

As for local government, Puerto Rico follows the traditional political pattern for lands colonized by the Spanish. The capital city of San Juan has the real power, and the various local units of government are clearly minor entities. This also seems to be the case with all her neighboring Latin American nations.

Organized Physical Planning -- Legislation was passed in August, 1942, establishing the Junta de Planificacion de Puerto Rico (insular planning board), and locating it as part of the executive office of the

governor. "Starting with an initial budget of $100,000, and an initial staff of 23 persons, its functions have grown over the years until now it requires a staff of about 450 employees and a budget of nearly two million dollars. In general, the functions of the Puerto Rican Planning Board are to serve in an advisory capacity to the governor and the legislature, and also to exercise certain regulatory powers with respect to the physical development of the island."[5A]

The background factors leading to the initial establishment of the planning agency in 1942 were many. These three causes were certainly among the foremost: (1) the general impact on the island of President Roosevelt's New Deal Administration, including the specific example of the then existing National Planning Board, (2) F.D.R.'s appointing Governor Rexford Guy Tugwell, and Tugwell's personal experience with the New York City Planning Commission, plus (3) the beginning movements by Puerto Rican grass root politicians towards what was later labelled 'Operation Bootstrap.'

To give a quick sense of the present (1959) extensive operations of this central government agency, it might be wise to quote a number of selected titles from the Planning Board's organizational chart:

[5A]p. 47, Puerto Rico, Bureau of Integrated Planning, Puerto Rico Planning Board, Comprehensive Regional Planning in Puerto Rico, (Santurce, June 1958). Cited hereafter as "Regional Planning in Puerto Rico," 1958.

"Bureau of Integrated Planning

Division of State and Regional Master Planning

Division of Social Analysis

Division of Special Studies in Integrated Planning

Bureau of Public Works Programming

Division of Finance

Division of Public Works Progress

Division of Programming

Bureau of Urban Planning

...

Zoning Section

Official Map Section

Division of Urban Planning

Master Planning Section

Urban Renewal and Housing Section

Bureau of Projects Revision

Division of Public Project

Division of Private Projects

Major Subdivision Section

Minor Subdivision Section

Bureau of Economics and Statistics

Division of Statistics

Economic Division

Bureau of Permits."[6A]

[6A] p. 50, "Regional Planning in Puerto Rico," 1958.

To balance this short description of the Puerto Rican island-wide physical planning agency, it must be acknowledge that, "Although planning as a whole has developed in rather centralized fashion in Puerto Rico, efforts are underway to effect somewhat more decentralization through building up the functions of the local planning commissions; and also, through assisting in the establishment of new planning units in several of the other commonwealth departments and agencies most directly concerned. Also contemplated is the establishment of a planning school at the University of Puerto Rico."[7A]

Environmental Survey Data -- To understand the specific physical and human environment in which this particular N.P.P. agency operates, a minimum of survey data on Puerto Rico is necessary. This island's 3,435 square miles[8A] places it in the thesis classification of 'provincial.' "Puerto Rico is one of the most congested islands of the (Caribbean) Antilles, and is one of the areas of greatest density in the world. There are approximately 2,400,000 inhabitants[9A] in Puerto Rico, which is an average density of 640 persons per square miles. The population is unevenly distributed. The seven main urban areas house more than 40% of the total population; the remaining 60% are located in the rural area and

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[7A] P. 48, "Regional Planning in Puerto Rico," 1958.

[8A] P. 24, Rand McNally-Pocket World Atlas, (New York: Pocket Books, Inc., 1951).

[9A] P. 24, Rand McNally-Pocket World Atlas, (New York: Pocket Books, Inc., 1951).

smaller urban centers."[10A] Of that main urban population, more than half (or 463,000) live in the San Juan metropolitan area; and the remainder is proportionately distributed in descending rank among the cities of Ponce, Mayaguez, Arecibo, Aguadilla, Humacao, and Guayama.

Coupled with this high density and uneven population distribution, Puerto Rico's very high annual percentage rate of population increase continues to exert more pressure on the limited amount of good land. The United Nations estimates usually place her growth rate at over 3.0% increase per annum.[11A] This is an exceptionally high figure from a global point of view, as can be seen by comparing this to the chart in the thesis section on N.P.P. survey and analysis of national occupants.

Fortunately for the burden on Puerto Rican land, a large number of the inhabitants emigrate to the United States. From one of the survey and analyses of the island's occupants, the Puerto Rican Planning Board knows that, "In the decade 1940-1950 the average yearly emigration to the United States of America reached 20,000 (persons). In 1951 it increased to 52,000 and in 1952 to 98,000."[12A] Some of this population flow is engaged in a periodic round trip movement, from the island to the mainland, and later, home again.

[10A] p. 10, Edvardo Barañano, Regional Plan for the San Juan Metropolitan Area, A Consultant Plan Prepared for the Puerto Rico Planning Board, (New York: Aldus Printers, 1956). Hereafter cited as "Barañano's Plan for San Juan," 1956.

[11A] p. 123, Table #1, Demographic Yearbook, 9th Issue (New York: Statistical Office of the United Nations, 1957).

[12A] Puerto Rico, Puerto Rico Planning Board, 12th Annual Report, 1953-1954.

San Juan, the capital of the commonwealth, dominates the island not only politically, but also culturally and economically. It was recently estimated that while the San Juan metropolitan area only housed roughly twenty percent of the Puerto Rican population, it employed almost 40% of the island's total labor force.[13A]

Now to turn to the survey point of view of the natural scientists. Topographically, Puerto Rico is one of the most varied mountains in the Caribbean. The shape of the island is a rectangle of approximately 110 miles east-west and about 35 miles wide, north-south. A main spine of mountain ranges, with peaks rising about 4,000 feet, run east-west in the center of the island. Sloping from this range are foothills, both on the north and south sides, and these hills give way to coastal lowlands.[14A] Dr. Rafael Pico, past chairman of the Puerto Rico Planning Board, approximates that 40% of the total area of the island is mountainous, 35% hills and 25% plains.[15A]

"From a climatic standpoint, Puerto Rico has great variety; from a humid and rainy area in the northeast, where the rainfall reaches 150 inches per year, to the southwest where conditions change drastically to only 20 cubic inches per year."[16A]

[13A] p. 12, "Barañano's Plan for San Juan," 1956. The figure (40%) is for the fiscal year 1954-1955.

[14A] p. 10, "Barañano's Plan for San Juan," 1956.

[15A] Dr. Rafael Pico, Geografía de Puerto Rico, Editorial Universitaria, Puerto Rico, 1954.

[16A] p. 10, "Barañano's Plan for San Juan," 1956.

The total rural land of Puerto Rico is 2,184,591 acres. Rafael Pico's survey of the physical environment estimates that 37% of the total area (or 776,960 acres) is productive land and should be used for agricultural purposes. The existing rural land use shows poor ground management because 42% (or 874,080) is actually under cultivation. The crop breakdown on this cultivated land is 50% sugar cane, 20% tobacco, 20% predominantly coffee plantations, and the remaining 10% is utilized for commercial coconut, pineapple, and forests. Pico's study goes on to the next main category and concludes that 36% of the total rural land is suited for pasture. The official studies on land capabilities claim that approximately 22% of the total area of the island (or 485,600 acres) is appropriate for forests. Here again the existing rural land use shows poor management practices, for only 114,000 of those acres presently grow timber. The environmental analysis concludes that 4% of the island's territory is unsuitable for any form of rural production.[17A]

Official Planning Projections -- After these and other physical planning surveys were completed, the Puerto Rico Planning Board began working out a picture of the prospective development of the total population and total island economy. "Much work has already been done by the Planning Board in making such overall projections... With respect to population, present anticipations are for continued growth until sometime between 1960 and 1965, followed by a decline -- which will bring the total

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[17A]Pico, Geografía de Puerto Rico, 1954. (Includes material in above paragraph.)

population down to slightly under its present levels by 1975. The labor force, however, is expected to continue growing, and by 1975, to number around 856,000 persons, an increase of a little more than one-third over present levels.

"Turning to economic development, commonwealth gross product -- (i.e. the gross value of goods and services produced annually in Puerto Rico) -- measured in constant dollars, is expected to increase over three and one-half times its present level by 1975... As for the relationship between production and employment, while continuing increases in output per worker are expected in practically all fields; nevertheless, employment is expected to rise by more than 50 per cent and relatively full employment of the expanded labor force is anticipated by 1975."[18A]

To analyze these survey projections in more detail, and to show the implications of these trends to the physical environment, this appendix will quote a series of excerpts from an official Puerto Rico Planning Board report: "In agriculture, employment is expected to continue declining, although new patterns of production are anticipated -- leading to higher physical output, gross receipts from sales, and net income.

"Employment in trade, services, and other sections of the economy is expected to grow by about one-third an absolute although not a relative increase.

"A few other shifts of significance to planners may also be mentioned. In spite of the fact that population as a whole may be slightly

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[18A] P. 3, "Regional Planning in Puerto Rico," 1958.

smaller by 1975, family size is expected to decrease, resulting in an increase of nearly one-third in the number of families, with corresponding implications for housing markets."[19A]

Large increases in consumer expenditure is anticipated for transportation, "which taken together with expanded industrial and commercial transportation requirements, raise corresponding implications for highway planning, as well as for land use planning in general.

> "Although the population of school age is expected to decline, growing emphasis is needed on education, particularly at the junior and senior high school and college levels if productivity goals are to be met.
>
> ...Our experience with industrialization to date tends to corroborate experience elsewhere, namely, that, for a variety of reasons, most industries prefer to locate in or near larger urban areas... Experience here, as elsewhere, shows that the bulk of them (industry-oriented workers) will choose to move near to their work. In short, even despite a stabilized total population, internal migration will continue, with the cities and towns growing and rural areas declining.
>
> Clearly this continuing migration will present difficult problems of planning and programming. Extensive new facilities and services will have to be provided in the urban areas. Indeed, Puerto Rico's experience to date with industrial promotion indicates that provisions of such things as roads, housing and schools, as well as commercial facilities and services, is as important in attracting new industry to particular areas as is the provision of industrial sites, buildings, and direct services. Yet at the same time, in view of our continuing emphasis on agricultural development, we must continue to provide necessary services and facilities in rural areas, despite their declining populations.
>
> The very nature, as well as the magnitude of the shifts anticipated in our economic structure imply not only

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[19A] P. 3, "Regional Planning in Puerto Rico," 1958.

complex new requirements, but also a continuing and deepening transformation in our traditional pattern of settlement and way of life."[20A]

The last two excerpts in this series of quotes on survey projections seem to echo the tone of the main body of the thesis. "It is recognized, of course, that such projections can only reflect, as of a given point in time, the most probable extent and character of future development, and that changing circumstances, technical innovations, etc. can alter this outlook, so that projections must necessarily be revised from time to time.

"Thus the more we find out about particular patterns of change -- of urban growth, of rural decline -- and the more we can find out about the comparative combined requirements, costs and benefits of alternative regional development plans, the better job we can do in programming the allocation of resources."[21A]

Making the Comprehensive Plan -- "In Puerto Rico, as elsewhere, planning has tended to follow along specialized lines. Some plans -- e.g. highways, rural resettlement projects, etc. -- are on an island-wide basis. Other plans -- e.g. metropolitan San Juan, or numerous smaller cities and towns -- relate to particular areas.

"While this is a fairly traditional approach, it has numerous weaknesses. Perhaps the most serious is the necessary piecemeal integration of a variety of specialized plans in a small island characterized by a rapidly growing economy.

[20A] P. 3, "Regional Planning in Puerto Rico," 1958.

[21A] Pp. 3-7, "Regional Planning in Puerto Rico," 1958.

"In order to improve the planning process, we are now attempting to prepare so-called 'comprehensive regional plans.' To this end the island has been divided into five regions and sub-regions. For each region, the objective is an overall plan covering development in three general areas -- (1) the economy -- i.e. agriculture, industry, trade and services; (2) certain supporting services on which economic development is predicted, such as port facilities, water supplies, highway and electric power; (3) other facilities required by the population, such as housing, schools, medical facilities, and recreation areas."[22A]

While the preparation of such comprehensive plans, more or less concurrently for the several types of development, and for all regions, presents numerous conceptual and operating problems, it is hoped that the advantages to be derived will justify whatever effort is involved. One serious conceptual problem ... related to capital budgets. What assumptions should be used with regard to future public capital expenditures? Should each expenditure be projected on some 'normal' basis, or should they be projected to meet foreseeable needs by a certain date? Another problem is the lack of adequate information on many areas. A third conceptual problem is to what extent regional plans should be based on simple forecasts of observed trends; and to what extent should they attempt to modify these trends.

> "Still a fourth concept -- is a specific methodology for determining a 'least cost' pattern where several programs are involved. These, and similar questions can only be answered, if at all, as we get more deeply into this type of work, and have the available evidence spread out before us, and confront particular problems in their context.

[22A] p. iv, "Regional Planning in Puerto Rico," 1958.

Operationally, the chief problem which arises is where does the work of the Planning Board leave off and the work of the operating agencies begin? Many of the operating departments and agencies have their own planning offices, and others will have them in the future. We cannot and should not duplicate their efforts, yet somehow we must work with them and bring them into effective working relationships with each other. In general, we are attempting to deal with the operational problem through the device of an inter-agency committee on the technical level, one of whose main objectives is to help evaluate the regional economic and population projections described above. The results, in turn will become the basis for preparing, or revising, their own more detailed specialized plan.

Closely related to the inter-agency question is the degree of detail to be embodied in the 'comprehensive' plan as contrasted to the several specialized plans. On this question, our present thought is that the comprehensive plan report should be limited to brief summaries of their interrelationships. More detailed treatment will be found in the specialized plan reports prepared by the agencies most concerned.

At any rate, the comprehensive regional plan, when finally worked out, must satisfy several criteria. From the viewpoint of the individual region -- the plan must present an internally consistent, feasible and viable set of proposals, fitted to the region's needs and resources. From the viewpoint of the whole (Puerto Rican island), the sum of the regional development patterns must be consistent with the expected growth of the population and the economy as a whole, including the financial capabilities of the (commonwealth) government; while the several specialized plans must be consistent with the functional requirements of the sector of the economy to which they relate."[23A]

Implementing the Island-Wide Physical Plan -- "To conclude this discussion of the present work of the Puerto Rico Planning Board in comprehensive regional planning, we believe it would be helpful to give a

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[23A] Pp. 39-41, "Regional Planning in Puerto Rico," 1958.

brief resume of the powers available to the Board to implement its plans. In perspective, it may be said that economic and social development of the island is a task for the commonwealth government as a whole, not just the Planning Board. Furthermore, the government has extensive resources for this purpose.

"For industrial and commercial development, it has the Economic Development Administration and the Puerto Rico Industrial Development Company, as well as the financial resources of the Government Development Bank. For agricultural development and reforestation, there are a variety of commonwealth agencies (the Department of Agriculture, the Land Authority, the Experimental Station, the Extension Service, etc.) as well as a number of U.S. federal agencies. Coordinating these efforts is a new Agricultural Development Council.

"Considerable powers are also available to the government in connection with the various supporting facilities and services. Such fields as education, health, and highways are, of course, customarily a responsibility of government, in whole or part. But in Puerto Rico, water and electric power are also provided by public corporations, as are at least a limited part of our communications.

"Also, there are extensive public housing and urban renewal programs, as well as a rather far reaching program for rural resettlement, coupled with an aided self-help program to provide low cost housing on a cooperative basis. Thus, it can be seen that the commonwealth government can and does play a very significant role in all aspects of economic and social development.

"The Planning Board, in turn, has much to do with general and specific guiding and shaping of these many activities. In recognition of its central role, it is located in the executive office of the governor, and its chairman is on a level with the members of cabinet. Among its tools and resources may be mentioned: annual economic reports, the six year financial program, the preparation of master plans and official maps, project review, and the exercise of the police power through zoning, building regulations and subdivision control."[24A]

2. Israel

History of Physical Planning Movement[25A] The State of Israel came into being on May 14, 1948; and national physical planning was in the process of official establishment at that same time. To truly understand this later action one must be aware of the cultural and political history behind the physical planning movement.

Culturally and ideologically, the Jews were familiar with the notion of planning the physical environment from the very beginning of their

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[24A] Pp. 42-43, "Regional Planning in Puerto Rico," 1958.

[25A] Unless specifically cited to the contrary, all the information for this entire section on Israel was taken from a previous study by the author entitled: "An Evaluation of National Physical Planning in Israel" (unpublished paper by David A. Jokinen and Frank Vigier for graduate seminar on 'Land Use Problems in Developing Areas,' M.I.T. Department of City and Regional Planning, fall term, 1958). Pertinent sources utilized by that study are listed in this thesis bibliography. Cited hereafter as "Jokinen and Vigier, N.P.P. in Israel," 1958.

Palestine settlement. The world Zionist movement began its migration back to Israel at the turn of this century. They found it necessary to devise self-sufficient communal clusters in order to survive under the alien Turkish rule. In 1909 the Kibbutzim was established as the standard pattern of Jewish settlement. This rigorously planned micro-environment formed the basis of the economic life for the early Jewish settlers, and provided a unit for defense and military security as well. Here is the beginning of the still existing connection between ruralism, militarism, and physical planning. The Kibbutzim was primarily a communal agricultural settlement, but to be truly self-sufficient in this hostile foreign land, it assembled within its boundaries all the traditional European Jewish urban activities of culture, the professions, trades and skills.

The Kibbutzim was just the beginning of a series of planned rural community types devised by the Jewish colonists. In 1921 they invented the Moshav Ovdim. As different groups of Jewish immigrants established clusters in other areas of Palestine, they created their own new forms of planned communities. The Moshav was originated in 1933, and three years later they developed the Moshav Shitufi. Physical planning became a cherished concept and was placed high in the hierarchy of values.

The new British mandate government of Palestine institutionalized the first area-wide physical planning legislation with its Town Planning and Building Ordinance of 1936. Another English act was in the works during the hectic days before the end of the mandate. This was being prepared by Mr. Henry Kendall, the government town planning advisor, and was called the Town and Country Planning and Building Ordinance, 1947.

Shortly after the termination of the mandate a committee of Israeli physical planners was appointed to take advantage of Mr. Kendall's pioneering effort, and to study the adaptability of this nearly completed bill to the changed political conditions and propose new amendments.

Under the existing setup the Department of Town and Country Planning of the Ministry of the Interior is in charge of planning administration for the whole country, with headquarters in Jerusalem, the national capitol. The department's six regional offices are in charge of their particular region's planning administration, and the preparation of outline plans for some local authorities. The present national physical planning department has two major divisions: (1) the long-term planning section, and (2) the planning control and administration section.

A few national 'facet' plans still operate out of various central government ministries, and national semi-public organizations; but there are numerous proposals in the air to further centralize and strengthen the N.P.P. agency. For the purposes of this appendix, only a few organizational proposals need be mentioned. One would establish a National Planning and Building Council under the chairmanship of the Minister of the Interior. Members would include representatives of other ministries and physical planners appointed by the Council. The authority of the Council includes the preparation of the National Master Plan, guidance of the District Planning Commission in the preparation of the district outline plans, and final approval of local outline and district outline plans.

Another fresh organizational proposal is advanced by K. H. Baruth, a professional planner, who says, "As experience has shown, there can be no doubt that only a central planning authority will be able to tackle the

physical planning of Israel as a whole. Co-ordination of existing and future opposing interests and views can best be effected by the creation of a long overdue (national) Ministry of Planning and Development. Its duty should be to secure consistency and continuity in the framing and execution of a national policy with regard to the use and development of land.

"The future minister would have to decide such questions as rival land-use, distribution of population, compensation and betterment procedure, etc. In addition, the minister would have to foster research on physical planning in general, and planning standards in particular, and publish the results as a guide to planners.

"There will remain planning functions in other ministries, such as economic and agricultural planning, but the Minister for Planning and Development should have full facilities and powers for co-ordination."[26A]

Environment Survey Data -- Israel is 8,000 square miles in size, clearly 'provincial' by the thesis global classification. Its topography is extremely varied, ranging from steep wooded hills and sub-tropical valleys below sea level, to the extensive desert region of the Negev. (Almost half of the national territory is located in this southern arid, relatively uninhabited tract.) Water is the controlling factor in the areas of the state which possess a farming potential. But the agri-

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[26A] P. 35, K. H. Baruth, National Land Use Planning -- Israel, A Report to the XXII International Congress for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954. Cited hereafter as "Baruth Report to I.C.H.T.P.," 1954.

cultural irrigation schemes are extremely expensive. Israel has few natural resources of importance. Citrus products are the country's main export.

The population pressure on land now is fairly intense, and it will continue to be more so in the future. In the ten years since the establishment of the State, Israel's number of occupants has increased by a fantastic 320%. In 1948 the figure was 650,000 and by late 1958 the total national population had surpassed 2,000,000. The average density today is about 400 persons per inhabitable square mile, based on a generous estimate of five thousand 'arable' square miles. (Some authorities might argue for only 3,500 arable square miles and therefore a density of about 570.) It has been calculated that only one-fifth of this growth can be attributed to natural increase, and the remaining majority to immigration from various countries. The cause of this initial tidal wave of new settlers is clearly found in the stated principle of this nation's declaration of independence which proclaims that 'The State of Israel will be open to the immigration of Jews from all countries of their dispersion.'

This writer has not been able to find any official Israeli population projections, either by the Planning Department or any other agency of the central government such as a statistical bureau. However, this author, with the technical assistance of another physical planner, has ventured a rough calculation of future increase. Our estimate, based on certain assumptions about immigration and per cent of natural increase, is that the total population of Israel will number 3,000,000 after 1965, and reach the 4 million mark about 1970.[27A] This projection has been con-

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[27A]The details of our assumptions on future immigration and future percentage of natural increase can be found on pp. 4 & 5 of "Jokinen and Vigier, N.P.P. in Israel," 1958.

sidered conservative by professional Israeli economists and others who have reviewed our study. That will mean a very high future (1970) density of 800 persons per inhabitable square mile (on the generous assumption of five thousand 'arable' square miles).

More important than the number of people, is their cultural origin. One of the most crucial problems facing this developing nation is the assimilation of a majority of its population, whose dominant characteristic is extreme diversity and almost hostile heterogeneity. In the period of pre-World War II, 80% of the immigrants to Israel came from east and west Europe. However, today the overwhelming majority of the new citizens are Orientals and Africans. Below is a table illustrating the origin of Israeli immigrants from May 1948 to December 1956:[28A]

36.9%	Oriental (Asia and Near East)
31.6%	African
26.0%	Eastern European
4.0%	Western European
1.5%	North and South American
100.0%	

Another population problem which seems to bother the Israeli physical planners very much is distribution. In every official planning report or article, there is mention of the need to decongest the coastal urban agglomeration and to distribute the total population more evenly across

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[28A]Israel, Official Government Information Agency, Facts About Israel, Jerusalem, 1957. Cited hereafter as "Official Facts About Israel," 1957.

the land. The planning analysis by Jokinen and Vigier concludes that, in 1956, almost half of the nation's total occupants were concentrated in only three cities. The chart below illustrates this graphically:

% National Population	Location
25	Tel Aviv - Jaffa
11	Haifa
8	Jerusalem
29	Other urban centers (mostly around Tel Aviv)
27	All rural areas

Also, a map would more clearly highlight this present 'imbalanced'(?) population distribution.

There have been a number of planning surveys on a national scale in Israel. One of the country's best known is the soil survey in the early 1950's. The team of foreign and Israeli land experts was headed up by the American, Professor W. C. Lowdermilk. The survey was oriented toward action and future planned change, as all N.P.P. surveys should be. And it specifically focused upon alternative land use capabilities under dry and irrigated conditions. Of the total state area of 21,020,000 dunam (roughly 4 dunam to an acre), an area of 9.5 million dunam was mapped and analyzed. This is the zone of potential multiple use land and is of critical importance to the country. The remaining 11.5 million dunam are in the southern arid Negev region, which is considered to have (with a couple of minor exceptions) no agricultural potential, plus natural restrictions on most other uses.

The latest breakdown on existing land use this author was able to locate is 1954. That Israel territorial chart is presented below:[29A]

Approximate Dunam	Major Use	Explanation and/or Subclassification of Major Uses	
1,820,000	"urban"	-areas under jurisdiction of local councils and municipalities	850,000
		-industry outside local boundaries, mines in Negev, etc.	20,000
		-areas for new settlement	950,000
160,000	"circulation"	-services (irrigation, sewage, power etc.)	20,000
		-roads, railways, aerodromes	140,000
3,758,000	"rural"	-arable fields (unirrigated)	2,450,000
		-arable fields (irrigated)	700,000
		-orchards and olive groves	283,000
		-woodlands and forests	150,000
		-various other cultivations	100,000
		-grazing	75,000
2,600,000	"reservations"	(land reserved for national parks, preservation areas and other open ground -- of which 1,500,000 dunam in Negev)	
261,580	"water"	-fish ponds	34,180
		-rivers, wadies, lakes, reservoirs (excluding Negev south of Beersheba)	227,400
26,560	"archeology"	(antiquities, ruins, mounds, etc. - excluding Negev south of Beersheba)	
12,393,860	"unused"	(land for which no use or re-use has yet been defined)	
21,020,000			

[29A] p. 34, "Baruth Report to I.C.H.T.P.," 1954.

National Goals -- A major national social goal which has environmental implications, is the assimilation of all immigrants (their extremely diverse cultural backgrounds have been cited in the previous survey) into a strongly nationalist and unified Hebrew civilization. This means that national physical planning must purposely see to it that no city becomes identified as a place solely for German Jews, or Yemenite Jews, etc. And on the rural scene the same would apply.

Beyond integrating these multi-tongued people into one voice, the goal is to pull their diverse occupational skills together into a non-duplicating, harmonious and productive national labor force. This task has been further complicated by the nation economic goal of raising the entire Israeli population per capital income to that of a 'moderate European standard of living.' To do this in a land lacking adequate natural resources, and located in a region plagued by unstable political conditions which demand massive allocations of scarce funds for defense, is a tremendous challenge. Furthermore, a complicating factor is the goal of allegedly wanting to achieve a proper balance between Israeli consumption and production. That is, arriving at an eventual self-sufficient economy instead of the present status of living off financial grants from abroad.

To national physical planning this means getting the utmost benefit from every existing and future physical facility and environmental arrangement.

Plan Making -- In the early 1950's the N.P.P. agency was called the Government Planning Division, and was located in the prime minister's office. The director of the Israeli Physical Planning Division at that time was Arieh Sharon. That agency produced the most important milestone so far in Israeli's experience with N.P.P. This was the 1952 National Development Plan. A justification of its principal objectives was offered that same year by Sharon, its principal author, in the following terms:

> "A national plan seeking to provide the best pattern for the country's development must indicate the best siting of agricultural settlements; the most effective location of cities and industrial centres; the lay-out of communications; and the distribution of national parks and greenbelts. In accordance with this, the (national) Master Plan prepared by the Government Planning Division comprises separate detailed plans dealing with each of these aspects of national development.
>
> One of the principal objectives of the plan is to promote harmonious growth and a balanced spread of the population in various parts of the country in accordance with local resources, climatic and physical conditions, and economic factors. The basic premise adopted in planning the distribution of the population is that Israel will develop along the line of intensive rural and urban settlement characteristics of some of the smaller progressive nations of the west, e.g. Switzerland, Holland, and Denmark; which show similarities with Israel in area, limited natural resources, and aspirations to a high standard of civilized living. An indispensable condition for the achievement of this goal is the intensive development of all regions of the country and a properly balanced occupational division of the population -- between agriculture, producing primary commodities, and the cities providing the necessary services and essential industries."[30A]

Deeper investigation reveals the two dominant environmental goals in this 1952 National Development Plan are: (1) distributing land

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[30A] Arieh Sharon, "The Planning of Israel -- The National Master Plan," Israel and the Middle East, Nos. 3-5, Tel Aviv, 1952.

occupancy and the intensity of land use fairly evenly across the national territory, and (2) the importance of agriculture (with all its services - irrigation, etc.) as a fundamental pillar of Israel's economic base. The emotional, political, and ideological reasons for this second objective are distinctly Israeli. For the country was founded upon the beliefs and mores of Zionism, which gives a bias to national physical planning policies in the nostalgic direction of 'returning to the good soil.' Also important is the military question of placing Jewish settlers to preserve the claims on disputed land, especially near Arab frontiers.

With this strong focus on rural land use, one would expect detail rural plans, and they exist. During the pre-State each village was, almost by necessity, a self-contained unit. Now with most of the land reserves under national control, the scene is quite different. It was at the founding of the State and the 1949 armistice between Israel and the Arab States that extensive tracts of land fell into either public ownership or control. For administrative and planning purposes the 1952 National Plan divided the country into twenty-four regions. Three regions are the three major cities. Within each of the twenty-one small rural regions a detailed physical hierarchy was proposed: ranging from a constellation of agricultural cooperative and collective settlements (minimum 25 and maximum 64), through service villages (minimum 5 and maximum 8) to a central country town; and then these series of rural hierarchies are grouped around the regional urban center, of about 40,000 inhabitants. The location of each of these regional centers would be on a site efficiently servicing its agricultural hinterland.

Consistent with this vast program of rural settlement is the planned extensive irrigation system, which stretches across more than half of the country. This system stores water in the northern districts where rainfall is adequate; and when called upon distributes this precious commodity to all sections in the country's major zone of settlement, via an enormous main conduit and tributary pipe lines.

Since the early days of the new State there has been an active country-wide afforestation program. This tree planting work is part of the central government's overall planning for the rural sector of the national economy. Shade is a strongly desired amenity in a land where the sun-baked desert occupies nearly half of the national landscape. In the hill areas the new trees and their roots have also assisted in stopping the age-old erosion of steep slopes. This is particularly noticeable in the Jerusalem Corridor and along the Jordanian frontier. The National Afforestation Program is also oriented toward the commercial side of this timber venture.

Another one of the primary intentions of the 1952 National Development Plan was to restrict the future growth (considered excessive by the Israeli physical planners) of the three largest cities: Tel Aviv, Haifa, and Jerusalem (the national capitol).

National Implementation -- Physical planning is of utmost importance to this young rapidly developing nation. To quote ex-N.P.P. director Sharon, "In the older established countries, planning acts as a guide in their gradual process of natural evolution; it works at solving the difficult problems of an unplanned past, i.e. traffic congestion,

slums, and town planning improvements. While in Israel, it is concerned with the creation of the very foundation of its national existence."[31A]

As mentioned in the thesis body, money is a strong tool of N.P.P. implementation. In Israel with so much of the economy in public and semi-public hands, the control of public funds is crucial to physical planning. There is a special department for economic co-ordination and planning located in the Prime Minister's Office, which is specifically responsible for the national capital improvement program. The central government's total annual budget is composed of three sections: (1) defense, (2) ordinary, and (3) development. The large expenditures of the defense budget are kept a military secret. The ordinary budget, which is financed entirely from within the country, amounted to 635 million Israeli pounds in fiscal year 1957-1958.[32A] (A conversion to U.S. dollars would be roughly $317,700,000.) These funds pay the ordinary operating expenses of running a national government.

The capital improvement budget is almost entirely financed from foreign funds. Almost half of Israel's development budget is paid by capital grants from (A) the American government and (B) the West German reparations (which are beginning to dry up as the schedule of annual payments nears its completion). The other sizable support comes in the form of gifts from individuals and Jewish institutions. The remaining source of alien capital is foreign government loans. Nominal local income comes

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[31A]Sharon, "The National Master Plan," 1952.

[32A]"Official Facts About Israel,"1957.

from development fees and the sale of government land. Below is a chart showing how this money was spent in fiscal 1957-1958.[33A] (Note the amount for agriculture vis-a-vis industry.)

Development Expenditure (in 1,000 Israeli pounds)	Development Sector
95,400	agriculture
69,300	housing
56,000	budget debt service
29,450	industry
21,190	communications
20,627	mines
10,713	other
Total -- 333,500,000 Israeli pounds (converted to U.S. dollars -- $166,700,000)	

As for the implementation techniques over privately owned land the Israeli' adopted some of the British mandate government legislation. First, the amount of privately owned land is very small on a national comparison, and is almost wholly relegated to the older urban areas which were settled prior to the state's establishment. And second, the national legislation, in this case, allows the local city planning authorities to handle the matter.

> "The most important change which the 1947 bill was designed to effect relates to planning rates. The provision of the (old) law in regard to betterment tax proved to be unworkable and on this account local authorities were unable, for lack of funds, to undertake any desirable town planning improvements. Where it was possible to make such improvements at public expense (under the old law), the effect was to enhance the value of private properties without any proportionate compensation to the public purse. The 1957 bill provides for the imposition, both of a general planning rate upon all owners of land in a planning area, and a particular planning rate to meet the

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[33A] "Official Facts About Israel," 1957.

> expense of a particular planning scheme, to be levied only upon the owners of property affected by such schemes. The income from such rates should enable authorities to carry out a reasonably extensive long-term planning programme, and to introduce many public amenities the need for which has long been felt."[34A]

3. The Netherlands

History of National Physical Planning -- There is an old European saying that 'God created the world, with the exception of Holland -- which was created by the Dutchmen, themselves.' There is, of course, an element of exaggeration in this renowned statement, yet the Dutch have been reclaiming land since the thirteenth century. And if it wasn't for the absolutely amazing system of river and sea dikes, more than half (6,600 square miles) of the total Netherlands land area of 12,800 square miles would be subject to flooding.

The Dutch are proud of their national physical development. Every land occupant is keenly aware that large tracts of Dutch soil are the fruit of their centuries-long struggle against the water. (Since 1200 A.D. 2,200 square miles have been reclaimed.)[35A] And each citizen of Holland is also aware that still larger areas are maintained in habitable condition only by an ingenious network of civil engineering works, and by the care

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[34A] Palestine, The British Mandate Government of, Mr. Henry Kendall, "Town and Country Planning and Building Ordinance, 1957," Jerusalem, 1957.

[35A] P. 4, Netherlands, Government Physical Planning Service of the Ministry of Reconstruction and Housing, Physical Planning in the Netherlands, (The Hague: Netherland's Government Information Service, August, 1955). Cited hereafter as "Netherlands N.P.P.," 1955.

and attention paid to the country's hydraulic situation. To the problem of keeping the water out of polder lands is added the equally important one of keeping the salt out.

With this dramatic national land development as an introductory note, the time is ripe to quote a two paragraph historical sketch on the beginning of N.P.P., and Holland physical planning at all levels.

> "The logical sequence of (historical) events would be for levels of planning to be built upon the principles laid down at national or regional levels. In reality, somewhat the reverse has taken place, due to the chronological precedence of the municipal plan, both in legislation and in practice. - Housing Law of 1901 - Municipal planning has now become fairly general. Of the 1,009 communes 578 (57.3%) have a general plan which has been approved, and 314 (31.1%) have such a plan in the course of preparations; only 117 (11.6%) have no municipal physical plan as yet.
>
> In 1931, with the realization of the need for supra-municipal planning which had gained ground since World War I, the Regional Plan was instituted. (Note the close relationship between Dutch laws and the International Congresses on these topics.) Finally, the National Plan was provided for in 1941, and regional planning revised, both provisions being quite separate from the (National) Housing Law. The substance of these provisions was incorporated in a temporary National and Regional Planning Law in 1950. With the revision of the legislation mentioned before, it is intended to arrive at a completely new all-embracing law dealing with the entire question of physical planning."[36A]

At present, the minister responsible for N.P.P. is the Minister of Reconstruction and Housing. The National Physical Planning Service has three statutory powers: (A) comprehensive national planning and co-ordination of 'facet planning,' (B) supervision of planning activities within the territory of the provinces and municipalities, (C) the under-

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[36A] P. 25, "Netherlands N.P.P.," 1955.

lying survey and research. The National Service consists of a Standing Committee, other committees (if necessary), and a Bureau.[37A]

The Standing Committee is meant as the national co-ordinating planning centre. Among its members are a number of high officials representing all the ministries interested in land use, the Central Bureau of Statistics and the (Economic) Central Planning Bureau (both agencies of the Ministry of Economic Affaire), and in addition, a number of experts in the field of planning -- design and survey. The chairman is an outsider of recognized personal authority. Both the chairman and the members are appointed by the Crown.

The Bureau is at the disposition of the Standing Committee, as its technical and administrative instrument. The director of the Bureau serves simultaneously as the secretary to the committee. Apart from this, the Bureau acts as the technical agency in matters of regional and national planning in behalf of the minister. The staff is divided into four sections: "(1) Research, (2) Planning, (3) Administrative Affairs and (4) Secretariat."[38A]

Each of the eleven Netherland's provinces have a similar planning service, with a Standing Committee, a Bureau, and a committee for municipal development plans. The national office in The Hague is connected

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[37A] Pp. 7-8, Netherlands, Mr. J. Vink, Director of the Government Physical Planning Service, National Land Use Planning in the Netherlands, Reprint of a Report to the International Federation for Housing and Town Planning, Edinburgh, 1954, (The Hague: Information Department, Ministry of Reconstruction and Housing, 1954.) Cited hereafter as "Vink Report on National Land Use Planning," 1954.

[38A] P. 8, "Vink Report on National Land Use Planning," 1954.

to the work on the lower levels by its representation at the meeting of the provincial planning committees, and by periodic meetings of the Director of the Central Bureau with the directors of the provincial services.

National Physical Planning Survey and Analysis -- Holland is one of the select few countries of the world which has, and is conducting a literal multitude of physical planning surveys and analyses of good quality. This appendix can only highlight some aspects of that quantity and quality.

National land use is of foremost importance to the physical planner. In a comparison from 1900 to 1950 the total amount of built up area increased, as did the amount of urban land use per capita. The total area of waste land decreased, as did the per capita ratio. The total agricultural land area increased, but the ratio per head decreased drastically. And the total amount of forest land stayed constant, hence per capita ratio decreased.[39A] Below is a detailed 1954 breakdown.[40A]

[39A] p. 15, "Netherlands N.P.P.," 1955.

[40A] p. 3, "Vink Report on National Land Use Planning," 1954.

% of 'Land' Total	National Land Use	Square Miles	
9.3	Built Up Area (cities, canals, airfields, roads, etc.)	1,158	
6.2	Reserves and Waste Lands (sand dunes, water catchment areas, green belts, and buffers, etc.)	772	
4.0	Horticulture	502	
7.7	Forest	965	
31.0	Arable Land	3,861	
41.8	Pasture Land	5,212	
		12,850	Total 'land'
	Inland seas and estuaries	2,600	
	National territory grand total	15,450	Sq. mi.

According to the global chart in the thesis body, Holland is 'provincial' in size. "On this small and already intensively cultivated area a relatively very dense population has to live - average density ... 843 occupants per square mile. And apart, from being one of the densest countries of Western Civilization, the Netherlands population shows a continuous tendence of rapid increase... Hence the basic national planning problem is the pinching scarcity of land to meet the ever increasing demands for food production, for living and working, in a country already developed far above the average."[41A]

[41A] P. 3, "Vink Report on National Land Use Planning," 1954.

> "The increase of population has to be absorbed mainly by further industrialization. As a consequence, there is a further urbanization of living conditions in nearly all parts of the country and so the problem of residential density becomes one of national importance. Of course, the industrial development in itself, too, is a matter of national concern from the point of view of land use, location, water supply and water pollution and, last but not least, distribution of population.
>
> In the past, geographical and economic factors have caused a sharp concentration in the central western region. Here, a population of about 5 million - nearly one-half of our total number - is living on less than one-third of our total area, the larger part - nearly 3.9 million - being concentrated in the cluster of towns formed by Amsterdam, The Hague, Rotterdam, Utrecht, and a score of smaller ones. (The common name for this area is 'Randstad Holland' or the 'Western Metropolitan Region.') From the national angle, a more harmonious distribution of people over the whole of the country is one of the more outstanding planning questions and this, in fact, means a better distribution of the means of living, in particular of industry."[42A]

To widen this quick view of the national surveys it might prove useful to mention via categories those selected studies which have been published by the Government Physical Planning Service.[43A]

(1947) "Study of the Reconstruction of the North Seaside Resorts"

(1948) "Annotations Concerning the Dispersion of Holiday-Movement"

(1949) "Inquiry on Holiday Spending Outside Places of Residence in 1947"

(1950) "Efficient Holiday Accommodations"

(1954) "Two Recreational Studies with Sociological Background"

(1956) "Recreation Spaces in the Netherlands - the 'Veluwe'"

[42A] p. 4, "Vink Report on National Land Use Planning," 1954.

[43A] p. 17, "Vink Report on National Land Use Planning," 1954.

(1956) "Recreation on Water"

(1949) "Location Tendencies in Dutch Industry"

(1949) "Economic Development and Distribution of Population"

(1952) "Basic and Service Industries"

(1949) "The Distribution of Populations in the Netherlands"

(1949) "The Development of the Distribution of Population in the Netherlands, Especially in the West"

(1952) "Interim-Report on the Development of the Agglomeration-The Hague"

(1953) "First Report of the Committee for Regional Population Forecasts"

(1956) "The West of the Netherlands - In Relation to the Other Provinces"

(1948) "Calculation of the Annual Loss of Agricultural Land Owing to Urban Expansion, Road Building, Etc."

(1954) "Occupation of Land for Non-Agrarian Purposes"

(1953) "The Flooded Area of the South-West of the Netherlands (Provisional Survey)"

(1954) "Frist Interim-Report on the Development of the Flooded Areas (Analysis)"

(1955) "Planning -- Consequences of the Location of the Dams in the 'Delta Plan' -- Second Interim-Report of the Committee Dealing with the Physical Planning in the South-Western Area"

National Physical Plan Making -- One major conclusion comes out of the analysis of the environment: land is severely scarce. And this scarcity leads to tension. The various competing land uses all need more land than is available to them, and therefore are in a tense struggle for the scarce commodity. These main components of national land utilization, and their role in the Dutch national physical development policy, are herein presented in a series of excerpts quoted from an official government

planning publication:

"Industry.... The country has now come to the crossroads and it must choose between, on the one hand, still more intensified industrialization and, on the other hand, large-scale emigration or an appreciable lowering of the standard of living. Physical planning therefore gives the highest priority to encouragement of the establishment of industry in desirable locations. For rather than prohibiting such establishment where it is not wanted, the policy is to attract industries where they would be welcome.

"Some of the industries to be established are tied to the localities where minerals are to be found; this applies, for instance, to coal mining and the chemical plants dependent upon it.... In the case of industries which are not dependent upon minerals, transport considerations are apt to turn the scale in favour of their location in the west; the addition of steel rolling mills and chemical plants to the blast furnace complex at Velsen (on the Amsterdam-North Sea Canal), and the further development of the Rotterdam port and industrial area are cases in point....

"At the same time, however, efforts are being made - and with success - to develop industrial initiatives in other parts of the country, particularly in districts with a surplus of labor. The large nylon factory in the planned 'new town' at Emmen... is an example of this policy. Since 1952 six other 'development areas'... have been designated by the Government, where the establishment of industry is actively supported.

"The further progress of this decentralization progress will lead to physical planning measures in various parts of the country: the improvement of transport provisions, the preparation of industrial sites, a sometimes considerable extension of certain built-up areas with the attendant problem of creating a proper centre, etc. Generally speaking, it is not the intention when decentralizing industry to spread it uniformly over the whole country, but to collect it in sizable concentrations in each region.

"The discharge of waste into canals and rivers and into the air is a general problem resulting from the increased industrialization. In this connection, the density of population and the water economy of the country cause great difficulties.

"Agriculture.... At present rates of agricultural yield... some 2,000 square miles more agricultural land should be available for the 12 million inhabitants of Holland projected for 1970...."[44A] "Expressed in terms of per capital share, the tension in this situation becomes clearer. Despite all efforts to increase agricultural land, there in fact has been a decrease from (1900) 1.13 to 0.6 acres per head of the population (1950); as compared with 2.75 in the U.S.A., 0.98 in the United Kingdom, and 1.88 in France...."[45A] "There is no possibility of providing this much area (2,000 new square miles) in the form of additional large polders in the Yssel Meer (about 370,000 acres in all) or other land accreation schemes --

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[44A] Pp. 14-16, "Netherlands N.P.P.," 1955.

[45A] P. 12, "Netherlands N.P.P.," 1955.

Wadden Sea, South Holland, and Zealand sea arms. The shortage will have to be made up by raising yields on the present acreage. The necessary measures -- many of which will be of a drastic nature -- will largely have to be included in physical planning; they include better water control, improved methods of 'de-salting,'... the prevention of pollution of rivers and canals, the construction and improvement of roads, reclamation and the reparcelling of uneconomic holdings. Of the 60 million acres of farm land, some 36 million acres require some measure of reparcelling.

"At the same time, it is becoming a matter of increasing urgency that the available agricultural land -- particularly that bearing good yields -- should be retained for food production. A very special case is formed by market gardening land, found in the periphery expansion of many towns, and a subject of constant conflict between the interests of food production and those of housing. A striking example of this is the district south-west of The Hague, where the 'brick town' is continually in collision with the 'glass town' formed by the intensive glass-house cultivation carried on in the 'Westland.'

"Housing -- It is no accident that housing should be regulated to third in order of importance. Circumstance in Holland today (1955) dictate that this -- for many centuries such an important requirement of mankind -- cannot continue to receive an automatic first priority. The necessary economy of land use -- particularly agricultural land, but also undeveloped land -- compels a revision of preconceived ideas as to the reasonable claims that housing may make upon the country's soil.... (Also) this line of thought is strongly supported by the financial re-

strictions that post-war circumstances have imposed upon the cost of land for housing streets, etc.

"Up to the present, the one-family house has been the rule -- and still is in most of the smaller, and some of the medium sized towns. Multistory apartment blocks are being introduced more and more; three or four stories now being the rule in the large towns, and higher density housing is gaining ground everywhere. Even in villages, the question of whether the hitherto normal scale of parcelling can be maintained is being seriously considered. In general, housing density ranges from four per acre in villages, through twelve to sixteen per acre in medium-sized towns, to sixteen to twenty-four in large cities -- inclusive of the normal ancillaries and amenities. One of the foremost issues in physical planning today is whether and how the town planner is going to achieve equilibrium between the pressing claims of present-day restrictions and the demands of socially and aesthetically satisfactory residential quarters, such as will retain their value in the future.

"Recreation and Nature Reserves -- Similar tension is present here. The provision in the built-up area of private gardens, parks, sports and recreation grounds, is feeling the influence of the national trend toward economy in land use. And outside the towns, the reclamation and land drainage works, necessary to the increase of agricultural yield, bring up many difficult decisions regarding nature reserves.

"At the same time, the need for recreational facilities, both in and outside the residential areas, grows with the size of the population and with the increasing density of building. An issue that has been coming

more and more into the limelight of recent years is that of provision for the mass weekend and holiday; as a result of modern social measures, all sectors of the community feel a growing need of such facilities, which must be met. In this sphere, too, planning becomes the continual search for the best compromise between mutually conflicting demands.

"The numerous lakes, rivers, and canals afford important opportunities for sport and recreation. The further development of these possibilities, entailing in some cases the execution of other works, is receiving more and more attention.

"Transport -- Although Holland already possesses a dense network of roads, railways and waterways, the arterial road network will have to be further extended. More ver, the problems connected with roads and waterways are an important part of planning for industrial development, for reclamation, and for other works in the improvement of an effective agricultural area. It stands to reason that the desire to preserve valuable agricultural soil, and the little that is left of nature reserves, compels a most careful balancing of the various factors here, as well. Perhaps the last is even more necessary in the case of airports and their extensions, which the present demands of international aviation involve in the appropriation of enormous areas of land.

"Water Economy -- Mention has already been made here and there of the role played by water. But this element is so important, and occupies such a predominant place among the country's problems, as to be deserving of special mention. Formerly the accent was on drainage, thus the struggle <u>against</u> the water. At the present time great importance attaches also to

regulation and control, thus the struggle for water, whereby both quantity and quality are taken into account.

"Qualitatively, all kinds of measures can be devised to check the ingress of salt: (A) bringing fresh water to the threatened point, (B) shutting off the arms of the sea, (C) protection of the fresh water reservoir under the dunes against the exhaustion by the drinking water supply. This last-mentioned measure entails, for instance, very expensive works for the transport of river water from the Lek to infiltration areas in the dunes. The measures taken to ensure healthy water also include the prevention of rendering innocuous of foreign matter originating from residential areas and industry. Particularly in the case of chemical plants, this may give rise to problems which will have a decisive influence on the place where industry is to be established. Thus, it is partly for this reason that the new soda concern will be located at the seaside.

"As regards the quantitative control of water, the largest quantities are required for driving back the salt, and also for agriculture. The supplying of water during the period of growth is only in its infancy. But it opens up such perspectives for increasing farm production, that the value of one acre of fresh water reservoir is already considered to be equal to that of one acre of reclaimed land. First and foremost among such reservoirs is the Yssel Lake; and furthermore the estuaries in the south-west, if and when they are closed off under the 'Delta Plan.'

"It goes without saying that for its fresh water supplies, the Netherlands is largely dependent on its rivers, particularly on the Rhine. Hence, it is in connection with the Rhine that the international aspects of the problem come to the fore. Not only is the water discharged by the

river quantitatively important; but an important aspect from the point of view of purity is the prevention of pollution by waste from German, French, and other mining and industrial areas situated upstream."[46A]

Implementing the National Plan -- The pattern of the Netherlands public administration is characterized by a three-tier set-up. From base to top there are: (1) the municipalities, (2) the eleven provinces, and (3) the state. The powers of the local authorities are not based upon a special grant to them by the national government, but are derived on their own pre-existence. The municipalities have every power unless a higher authority (the province or the state) has taken the matter in question into its own hands.

This decentralization set-up reflects itself in the effectuation of physical planning. The municipal plans have had statutory power since 1921. They have to be approved by the executive body of their province, and come up for examination on the national level only in the case of appeal to the Crown. Planning powers for the regional plans are vested in each provincial legislative council, under approval of the Crown. These plans, too, have had statutory power, since 1941.

As for the state level, it seems the N.P.P. agency has a big stick (statutory power) but has found it only necessary to walk lightly. To quote Director Vink, "Under the existing legislation the act provides for a national plan with statutory power for the whole country, to be prepared

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[46A] Pp. 16-22, "Netherlands N.P.P.," 1955.

by the Government Physical Planning Service, and to laid down - after completion of a circumstantial procedure - by the Crown. For the people interested, the plan comes into effect only in an indirect way: the regional plans must be brought into accordance with the national plan; and subsequently the municipal plans must be brought into accordance with regional plans. Where no regional plan exists, the same applies directly to the conforming of the municipal plans to the national plan. On the other hand, as far as 'higher' interests dealt with in a regional or national plan are concerned, the 'lower' plans cannot be revised unless the higher authorities are willing to accept the corresponding revision in their own plans...

"The national plan has statutory power, and can be a comprehensive plan for the whole territory of the State or such a plan for certain parts of the territory or only a 'facet plan' dealing with specific aspects of physical development. In addition to this, (there is) a special procedure of interim-control... for the preparation period of a plan, to be introduced by a royal order. The national plans would be laid down by the Crown, except for a right of veto by Parliament. In virtue of the plan, however, the Minister (Reconstruction and Housing) might be empowered to make provisions for the working out of details, deviations, exemptions, and further regulations. The main instrument of enforcement would be a special planning permission. Once the municipal plans have been brought into accordance with the national plan in question, the application would be dealt with entirely by the local authorities; during the interim-period, however, the Minister would have a say....

"According to the existing provisions the standing committee (of the National Physical Planning Service) is in particular entrusted with: (A) framing of directives for planning; (B) advice and proposals concerning regional plans, municipal development plans, and physical planning activities in general; (C) proposals concerning the laying down or revision of the national plan, either for the country as a whole, or for parts of it....

"So far, the collaboration with the lower authorities as well as with the other responsible (national) ministries has been very promising indeed.... There has been no question of statutory power. The (national) planning proposals are only given in the broadest outline, and there is no intention that the local authorities should swallow the government scheme whole. The report (on the physical development at the mouth of the North Sea Canal) has been passed on in an advisory form to the executive body of that province. Yet a regional plan and local development plans are being prepared on the basis of the national ideas and in many respects even the actual development is already making headway along the lines of the (national) interim-report.

"Of course, if the national schemes themselves have no statutory power, they must be implemented and enforced as far as necessary in some indirect way. This could be done either by using the government's authority of approving regional plans or by giving directives for regional or municipal plans."[47A]

[47A] Pp. 8-13, "Vink Report on National Land Use Planning," 1954.

APPENDIX B.

Individual "Facets" of National Physical Planning in World Wide Use

Preface to Appendix B: This is an outline of selected examples of individual "facet" plans -- that is, plans concerned only with the arrangement of a single fragment of the entire national land use, or an 'isolated' feature of national land occupancy. This list clearly does not contain any samples of 'comprehensive' planning. The reader, most probably, could add other segments of the national environment which have had their "facet" plans. However, the purpose of this appendix is not encyclopedic, but rather to demonstrate the wide spread practice of "compartmentalized" physical planning at the national scale. These examples were selected to (1) illustrate how the approach to the same basic problem varies with different nations, (2) demonstrate how a minority of problems tend to receive a common international solution, (3) show the historical expansion of physical planning activities at the national level -- even if it's still generally in the stage of compartmentalization, and (4) examine planning in a large number of countries.

I. National Plans for the Creation of New Land: And the Protection, and Renewal of Land Uses

A. The Union of South Africa -- Here new land is being made out of waste area by adding the essential ingredient -- water. The irrigation

department of the national government has four principal activities:[1B]

1. The national weather service
2. Systematic collection and compilation of hydrographic data throughout the nation
3. Systematic reconnaissance surveys to determine where and how irrigation can take place, and subsequent initiation of irrigation schemes
4. Construction and maintenance of government irrigation works

B. Italy -- Since the 1900 national law, concerning the interests and power of the central government in swamp drainage and land reclamation, went into effect, much progress has been made, both in changes to improve the physical environment and changes to improve a coordinated manner of project planning and public works. This is both areal coordination and function cooperation.

C. Portugal -- Here are found national physical planning "facet" surveys and site selection of areas suitable for irrigation[3B], plus, of

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[1B] P. 85, F. Longstreth Thompson, National and Regional Planning in the Union of South Africa, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937. Cited hereafter as "Thompson Report to I.F.H.T.P.," 1951.

[2B] Pp. 64-68, Professor Eugenid Fuselli, National and Regional Planning in Italy, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937. Cited hereafter as "Fuselli Report to I.F.G.T.P.," 1937.

[3B] P. 69, A. C. Celestine da Costa, National Land Use Planning -- Portugal, A Report to the XXII International Congress for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954. Cited hereafter as "da Costa Report to I.C.H.T.P.," 1954.

course, their construction.

D. The United States of America -- Land reclamation and irrigation is undertaken by the National Department of the Interior. Flood control and protection is the domain of the National Civilian Engineering Division of the U.S. Army Corps of Engineers. The renewal of rural lands is part of the Fertilizer and Farm Management Program of the National Department of Agriculture. The renewal of urban land uses is a national-aid-to-local-areas program of the central government's Housing and Home Finance Agency.

E. Denmark -- Renewal of urban lands started with the Slum Clearance Act of 1939, and is administered under the National Ministry of Labour and Housing.[4B]

II. National Plans for the Rearrangement of Rural and Urban Land Occupancies

A. Finland -- The resettlement department of the National Ministry of Agriculture is responsible for the colonization of farm refugees from the Karelia region. The Finns were forced to either leave their homes or become subject to Russian rule, as the Soviets marched into Karelia after

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[4B] P. 15, Vagn Rud Nielsen, The Implementation of Planning Measures -- Denmark, A Report to the XX International Congress for Housing and Town Planning on "The Implementation of Planning Measures," Amsterdam, 1950. Cited hereafter as "Nielsen Report to I.C.H.T.P.," 1951.

the second world war, claiming it as their own for reparation. An unrelated move was the establishment of a special "National Planning Committee" in 1951 to examine, among other things, the 'excessive concentration of population, both urban and rural, in south western Finland' (as Prof. Meurman calls it).[5B]

B. The United Kingdom -- Spurred on by the utopian communities of Robert Owens, the 19th century village experiments, and Ebenezar Howard's living examples of garden cities, the British national government in 1946 passed the remarkable "New Towns Act." As Rodwin says, "The new goals, broadly speaking, were the exercise of development powers to control the form and the character of the city. More specifically, London was to be decongested. Balanced new towns were to aid the process by ringing London's periphery. And still other new towns were to be built (elsewhere in the U.K.) to correct specific urban disorders."[6B]

C. Norway -- A national plan was worked out for the distribution of Norway's surplus population, which previously had immigrated to the U.S. until World War I. This plan placed the colonization of new agricultural

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[5B] Pp. 21-22, Professor Otto I. Meurman, National Land Use Planning -- Finland, A Report to the XXII International Congress for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954. Cited hereafter as "Meurman Report to I.C.H.T.P.," 1954. Also this point has been mentioned in the author's personal correspondence with Professor Otto I. Meurman (Dean of Architectural Faculty, Finland Institute of Technology), especially the letter of September 1, 1959.

[6B] P. 55, Lloyd Rodwin, The British New Towns Policy, (Cambridge, Massachusetts: Harvard University Press, 1956).

areas as first priority with second, the establishment of new industries (related to forestry and the lumber trade); third, construction of fishing harbours; and finally, location of new industries based on water power resources of Norway.[7B] Previous to this national plan, a large part of the surplus peasant population drifted to the cities, especially Oslo, the national capitol.

D. The U.S.A. -- The most fundamental American national plan on land occupancy was a rural one designed to 'fill up' the western frontier. Such was the Homestead Act, passed by the federal congress around the middle of the last century. This national policy cemented into law the new typical American rural settlement pattern of isolated farm households living on the cultivated land (rather than the somewhat typical European pattern of a farm village cluster). This national policy gave away land free (normally 160 acres) for five years or so, of homestead squatting and cultivating. (Two other continental-sized nations, Canada and Australia, have followed similar notions of 'rural fill-ins,' but have generally allowed their political units to manage it.)[8B]

[7B] Pp. 75-76, Professor Dr. Sverre Pedersen, Landesplanug in Norwegen, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937. Cited hereafter as "Pedersen Report to I.F.H.T.P.," 1937.

[8B] The author's personal correspondence with the Department of Planning and Development of the Ontario Provincial government, Toronto, Canada; especially letter of May 6, 1959. "Ontario absorbs approximately 50% of all immigrants going to Canada." The provincial planning agency has, as one of its planning policies, the design of 'new towns'; especially in the northern regions of Ontario with its booming industrial and mining developments.

E. Italy -- This country is similar in some vital characteristics to Norway. (I.e. both are classified as 'spacious' according to land area chart of Chapter 2; both have mountainous linear spines with strong urban concentrations and uneven rural densities; both nations also have a 'surplus' rural population.) When the U.S.A. closed its doors to immigrants, Italy also had to develop a national program for population distribution under the central government's agency for migration and internal colonization.

III. National Plans for Transportation Networks

A. Canada -- The dominion government has now come to feel that highways are in the national interest as well as within the domain of the ten provincial governments. This has resulted in the country-wide plan of the new trans-Canada highway system (under construction).[9B]

B. Germany -- A similar state of affairs between the various landers and the central government produced the famous autobahn network.[10B]

[9B] This author in 1958 has personally driven on completed sections of this modern trans-Canada highway system that will eventually span the entire Dominion.

[10B] Here again, the author in 1954, has personally ridden on stretches of the German Autobahn network.

C. The U.S.A. -- The latest national highway plan is the multi-million dollar interstate limited-access expressway system (claimed to be the biggest single public works program in the history of mankind).

> "The fostering of transportation by water is a traditional interest of the (U.S.) federal government, which has been the chief source of financial support in this field during the past century. Federal expenditures have provided harbors and channels, an extensive inland waterway system, lighthouses, markers, and other navigational aids. In addition, federal barge line service is furnished on the inland waterways. Extensive financial support is likewise provided for the development of the Merchant Marine, including ship construction and operating subsidies, and a variety of services to marine operations."[11B]

> The American central government, through its principle aeronautics agency, "fosters the development of civil aeronautics and air commerce by the establishment, maintenance and operation of the federal airways and the various air navigation aids and facilities which they comprise; by the planning of a national airport system and the administration of the Federal Airport Program; by provision for the control and protection of air traffic; by technical development work in the field of aeronautics; by the conduct of various activities related to aviation safety; and by maintaining and operating the Washington National Airport."[12B]

The national government also concerns itself with the country's railroads and pipelines.

D. Denmark -- V. R. Nielsen says, "In Denmark national planning is not generally effected except within special fields e.g. railways, trunk roads, ports, aerodromes and,(a "facet" to be discussed in detail elsewhere in this outline) conservation of natural amenities."[13B]

[11B] p. 81, C. L. Dearning and Wilfred Owen, National Transportation Policy, (Washington, D. C.: The Brookings Institution, 1949).

[12B] p. 17, Dearing and Owen, National Transportation Policy.

[13B] p. 16, "Nielsen Report to I.C.H.T.P.," 1950.

E. The Union of South Africa -- From the time of the drafting of the Union's constitution, the central government has owned the bulk of the country's railway and harbor facilities. In the 1930's the same national transport agency took over civil aviation facilities. The agency is empowered to control, plan and manage the nation's rail, air, and water transportation in the public interest, and for the best development of the Union's territory. Also during the 'thirties, the central government established a national road board to plan a national system of main roads throughout the country (the building and maintenance of same to be done by the provincial governments).[14B]

F. Finland -- Professor Otto I. Meurman says, "Among the partial tasks of national planning, so far, one can mention the plans for creating a network of national trunk roads; special forest railtracks and winter roads for the economic use of distant forest resources; and plans concerning the (inland-waterway) floating of timber."[15B]

G. Czechoslovakia -- The following excerpts are from the 1937 report on National Planning prepared by the "Ustav Pro Stavbu M´st," or "Town Planning Institute," Prague.[16B]

[14B] Pp. 84-85, "Thompson Report to I.F.H.T.P.," 1937.

[15B] P. 22, "Meurman Report to I.F.H.T.P.," 1937.

[16B] Pp. 16-20, "Town Planning Institute," Prague, National and Regional Planning in Czechoslovakia, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937. Cited hereafter as "Czechoslovakia Report to I.F.H.T.P.," 1937.

"The State (new republic of Czechoslovakia) took over a heterogeneous and unsatisfactory (highway) network which had previously been bound politically, as well as economically, to different countries... The situation with regard to railways was not much better." "It was then necessary, first of all, to ascertain how the present system of railroads, highways, and waterways conformed to the needs of the present time and of the near future; and whether the location, the equipment and the organization were adequate. It was further necessary to compare the financial status of the separate means of transport and weigh the value of their services to the public, so as to obtain the basic data for fixing their charges and rates. Ultimately, it will be necessary to ascertain impartially which method is best suited to particular conditions, taking into account all circumstances, technical as well as economic, i.e. railway, automobile, waterway, aeroplane. All these tasks are being studied by the Commission for the General Transport of Czechoslovakia, which functions in an advisory capacity to the government... On this commission, the central authorities, important institutions and prominent economic experts are represented. The chairman is nominated by the (national) government."

IV. National Governmental Functions with Relationship to Regional and Local Planning

A. Scotland -- Land use planning is a function of local government operating under the general guidance, supervision and direction of central government. The ministerial responsibility for town and country planning in Scotland is vested in the Secretary of State for Scotland, the minister of cabinet rank in Her Majesty's government who has certain direct executive responsibilities vested in him by statute for certain spheres of Scottish administration. The Secretary of State exercises his functions through four departments. The administration of town and country planning (including the development as such of new towns) is a function of the Department of Health. The legislative functions of this national

department are:

"1. The approval, with or without modification, of development plans which the local planning authorities are required to submit, indicating the manner in which, and stages by which, the local authorities proposed that the land in their district be developed.

2. Decisions on appeals made by prospective developers against decisions of local planning authorities refusing permission.

3. Conformation of orders made by local planning authorities revoking or modifying planning permission, discontinuing or imposing conditions on existing authorized uses of land, or requiring the alternation or removal of existing buildings.

4. Approval of acquisitions of land by local planning authorities for planning purposes (including conformation of any compulsory purchase orders) and of disposals of such land.

5. Conformation of orders made by local planning authorities for the preservation of trees and woodlands; and for the preservation of buildings of historical and architectural interest.

6. General policy for the control of public display of advertising.

7. The authorization of grants payable in connection with local planning authority schemes of comprehensive development or redevelopment.

8. Inter-departmental discussions about, and co-ordination of, the land use requirements and the siting of building operations of other governmental departments, including the requirements of the service departments for training and defence purposes."[17B]

[17B] Pp. 71-77, James H. McGuinness, National Land Use Planning -- Scotland, A Report to the International Federation for Housing and Town Planning on "National Land Use Planning," Edinburgh, 1954. Cited hereafter as "McGuinness Report to I.F. H.T.P.," 1954.

In addition, apart from the day-to-day liaison on all questions concerned with land use requirements of local authorities, or the central government in Scotland, special machinery exists (with the Great Britain departments) for the co-ordinated examination of major development schemes. This machinery is the Scottish Physical Planning Committee, whose terms of reference are:

> "1. To keep under review, as a matter of long-term policy, the fundamental problems of Scotland as they affect the use of land and the settlement of population.
>
> 2. To deal with particular development proposals of major importance (excluding the industrial schemes dealt with by special Scottish Distribution of Industry Panel) which affect the land use interests of different departments, and require consultation and decision in Scotland."[18B]

Finally, the Secretary of State has specific powers to give directions to a local planning authority as to the provisions which they shall include in their development plans; and this power could, if necessary, be used to safeguard in the plans of any local authority any overriding national requirement which might otherwise be overlooked or remain unspecified.

B. Portugal -- Surveys and controls on the use of land are only compulsory, as yet, under Portuguese law when dealing with urban districts, 450 of which already have planning programs (1954). The central government has been responsible for starting work on the preparation of drawing up regional plans, and work is, at present, going on in respect to the

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[18B] Pp. 71-77, "McGuinness Report to the I.F.H.T.P.," 1954.

regions surrounding Lisbon and Oporto. However, no physical plan has yet been drawn up to cover the country as a whole; "facet" plans, of course, do exist. The government has a national agency to provide technical assistance to local planning programs (and many times do actually prepare local plans). This is the Direction General of Town Planning Services (D.G.S.U.). This agency has begun preliminary work on a national physical plan for the purposes of a framework for local action. These preliminary surveys have proven that it is not sufficient just to include all the facet plans into one general plan. The national agency feels that it will not be essential for their comprehensive national land use planning schemes to have statutory power, provided that, in approving them, the central government defines a certain number of principles and criteria to be adopted in the drawing up of national "facet" plans and also in regional and local plans, which have to be given statutory powers.[19B]

C. Poland -- During the 1930's Professor Tadeusz Tolwinski, Professor of Town Planning at the Technical University, Warsaw, submitted an international report on regional planning.[20B] The following excerpts are quoted to illustrate the work that was done in the period between World War I and World War II by the Polish national government with relationship to regional planning.

[19B] p. 69, "da Costa Report to I.C.H.T.P.," 1954.

[20B] pp. 78-82, Professor Tadeusz Tolwinski, National and Regional Planning in Poland, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937,

"After considering the conditions of life in cities and villages in different European and American countries, we, in Poland, affirm the necessity of (physical) planning schemes for cities and of national and regional planning." "Preparatory work for regional planning was undertaken ten years ago (1927)." "A part of this work has made considerable progress already and is being put into practice, while a part is still being studied and prepared. It is carried out on the basis of the following national legislation:

1. Regional schemes, and common (state - municipality) schemes, are prepared by a committee nominated by the national Minister of the Interior.

2. The committee consists of (a) chairman, appointed by the interior minister, (b) delegate of local government, district boards and local Chamber of Commerce, (c) representative of real estate owner, appointed by the interior minister, (d) delegated from minister of war and local army commanders, and (e) members representing the nation at large.

3. Beyond preparing schemes to receive the approval of the interior minister, the committee also submits projected regulations, the enforcement of which may be in the interests of the whole region or only parts thereof, and which will insure a rational development program."

"A considerable public interest in the twelve major regional planning areas has caused an increased tempo in this work, and its outcome is not confined to central studies and projects; but penetrates more and more into the field of effective (regional) technical, economic, and administrative work." A few examples of the districts already under planning: "Region #1 - a textile industry area with its main urban center at Lodz; Region #2 - the most important urban area of the western Polish provinces, centered on Poznan; Region #3 - the nation's only Baltic sea coast territory (World War I boundaries) which is of vital interest to the country's economy, together with its port city of Gdynia; Region #4 - territory of the mining and smelting industry - Silesia; Region #5 - the former

capitol of the state - Krakow, with its adjoining highlands and mountains of considerable importance as regards tourist traffic and health resorts; . . . Region #9 - Lwow, with its adjoining oil industry area; and of course, the Polish national capitol." Warsaw has both a detailed planning scheme for the city and its center, plus a general scheme for the enormous surrounding region.

D. Brazil -- The most important national "facet" plan in this, the largest country in South America, is the long-hoped for new national capitol. Since its birth as a separate nation in 1822, there has been a general popular demand for a new capital city. The people were stirred by rumors of the specially designed city of Washington, D. C. (one of the most dramatic of America's limited number of national "facet" physical plans). When the constitutional monarchy was established in 1823, Brazilia was suggested as the name for a future capitol. In 1889, the National Convention, which wrote the charter for the Brazilian republic, marked out an enormous rectangular wilderness area of approximately 4,000 square miles for the federal district. This interior region was chosen for its dry and bracing climate, somewhat similar to Arizona in southwestern United States. The latest Brazilian constitution, in 1946, made the transfer of the capitol mandatory.

In 1957, an international physical planning competition was organized for the comprehensive civic design of Brazilia. The idea of a city being created from scratch is not new to the Brazilian citizenry nor to their national chief executive for President Kubitschek has also been mayor, in 1939, of the first of Brazil's important cities to be built

directly from the drafting board (Belo Horizonte). April 21, 1960 is the target date when the government plans to move everything from pencils to politicians into its new national capitol.[21B]

V. Afforestation as a National "Facet" Plan

A. The Union of South Africa -- The National Department of Agriculture and Forestry administers the Union's Forest Act, whose policy is:

1. To protect and conserve the indigenous timber forests, and to utilize their products in such a manner as not to impair, but rather to increase their future productivity;

2. to increase the production of timber by formation and management of plantations;

3. to encourage the general afforestation of the country by inducing farmers to plant trees for shelter and fuel, and other local uses. Agricultural census statistics (1937) show the federal government owns approximately 20% of the scrub woodlands, and 73% of the true forests.[22B]

B. The U.S.A. -- National planning for America's forests is carried out by the federal government's Forest Service, an agency of the National Department of the Interior. The effect of this "facet" plan is limited to the publicly owned timber lands, and only those under federal control.

[21B] Pp. 181-186, John Dos Passos, "Dream City in the Wilderness," Reader's Digest, April, 1959.

[22B] P. 86, "Thompson Report to I.F.H.T.P.," 1937.

VI. National "Facet" Plans for Major Utility Systems

A. Norway -- "National (physical) planning was first suggested in Norway in 1920 by Professor Olav Heggstad, who submitted a national (facet) plan for the development of hydro-electric power plants in Norway, based on a thorough survey of the hydraulic power resources of the country."[23B]

B. Great Britain -- "The unification of the electric supply by means of a national grid system is the most considerable example of national (physical) planning that has been carried to completion in recent years. First the Electricity Supply Act, 1919, empowered the Board of Trade to appoint electricity commissioners to promote, regulate, and supervise the supply of electricity throughout Great Britain. The commissioners were authorized to combine existing electricity undertakings into joint authorities to operate over areas selected by the commissioners. Later, the Act of 1926 authorized the Minister of Transport to set up a central electricity board which, under the jurisdiction of the commissioners, has constructed and is operating the national grid. The main grid is now complete (1937), and the secondary and local supply lines are continually being added to."[24B] Since the date of this report, many technological improvements have been added to this national "facet" plan, not the least of which are the numerous atomic energy power stations.

[23B] P. 75, "Pedersen Report to I.F.H.T.P.," 1937.

[24B] P. 47, Professor Patrick Abercrombie, National and Regional Planning in Great Britain, A Report to the International Federation for Housing and Town Planning on "National and Regional Planning," Paris, 1937.

VII. National "Facet" Plans for Parks and Game Reserves

A. Czechoslovakia -- During the period between World War I and World War II, the Czechoslovakian government embarked upon a nation-wide, systematically planned program of nature conservation. "Protected territories, reservations, national parks, are some of the results of this conservation; and were based on reasons dictated by scientific, moral, aesthetic and especially in the case of the larger ones, recreational reasons, while others are for health centers, and to attract tourists. Today (1937) Czechoslovakia possesses some 160 reservations. The protection of primeval forests in sub-Carpathian Russia is being worked out now. One of the realizations of regional planning will soon be the creation of the national part territory in the mountain region of high Tatra, approximately 230 square miles in area. The interests of science, tourism, sports, and the development of health and climatic resours will be served here; and the betterment of the standard of living of the local inhabitant will, it is hoped, follow."[25B]

B. The Union of South Africa -- "Legislation was passed in 1926 providing for the establishment of national parks for the purpose of the propagation, protection, and preservation of wild animal life, wild vegetation, and objects of geological, historical, ethnological, or other scientific interest -- for the benefit, advantage, and enjoyment of the inhabitants of the Union. Fourteen national parks and game reserves have

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[25B] P. 20, "Czechslovakia Report to I.F.H.T.P.," 1937.

already been established during the past ten years (1926-1936) -- three in Cape Province; six in Natal and Zululand; three in the Transvaal; and two in the Orange Free State. They vary tremendously in size; the largest being the Kruger National Park in the Transvaal, which has an area of 8,000 square miles (larger than Wales). There are in addition three private game reserves in Natal which have been so publicly declared by the (national) administrator at the request of the owners."[26B]

C. The U.S.A. -- This area of national planning is carried out by two separate agencies within the central government's Department of the Interior, i.e. the National Park Service, and the Fish and Wildlife Service. Both these agencies have extensive public land holdings throughout the country, especially the western inter-mountain region of sparse settlement.

D. The United Kingdom -- "National parks in Britain -- except perhaps for the remoter parts of Scotland -- are in a different category from those in large countries such as the U.S.A. or the Union of South Africa. They are primarily areas in which, after agriculture, the primary claim is for recreation of a particular sort. The national parks are not intended to cater for mass recreation, nor for any of its better known urban forms such as organized games, spectacles, or even holiday camps.

> "For this reason the Act of 1949, which established the National Parks Commission, is known as the 'National Parks and Access to the Countryside Act.' Apart from the definition, and the administration in partnership with the local authorities

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[26B] P. 86, "Thompson Report to I.F.H.T.P.," 1937.

concerned, of the parks themselves; the effect of the Act is to give the public, for the first time, a positive right to be on private property, so long as that property is not cultivated or preserved or used for housing or commerce or industry.

The first three national parks to be actually established (1950) are: 1. the Peak District, 2. the Lake District, and 3. Snowdonia. The National Commission has also been asked to prepare a code for the guidance of townspeople using the countryside." "Another interesting move in the same direction (access to the countryside) is the national survey of footpaths, which is being organized by the 'Commons, Open Spaces and Footpaths Preservation Society.' When the information has been prepared and mapped, it will be passed to the county councils who are the primary planning authorities and who are responsible for the final survey under the National Parks Act." "In the same way the sea coast has come under scrutiny, first expert, then popular and finally statutory under the National Parks Act. Planning in the British countryside is necessarily biased in favor of preservation against development."[27B]

(The views, which have been quoted, are Professor W. G. Holford's, and are entirely personal, having no official authority whatsoever.)

VIII. National "Facet" Plans for the Preservation of Natural Amenities, and Historical Places

A. Italy -- "National interests, from the economic point of view (tourism industry) coincide with aesthetic reasons, for preserving the beauty of our country." The National Superintendency of Monuments and Fine Arts has the legal power to "intervene in order to prohibit, or limit,

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[27B] P. 42, Professor W. G. Holford, The Implementation of Planning Measures -- England and Wales, A Report to the International Congress for Housing and Town Planning on "The Implementation of Planning Measures," Amsterdam, 1950.

any work or construction which might be harmful to the beauty of the landscape, wood, river, waterfall, rocks, ruins, or other place of civic, literary, or historic interest -- in such places any form of hoarding or advertising which might spoil the beauty of the scene -- is forbidden."

"The places which have come under the protection of this Italian law are not fixed or contained in any list; but the proper (national) authorities must schedule them, and make them publically known."[28B]

B. Denmark -- "The Preservation of Buildings Act (1918) provides for the preservation of buildings in Denmark of special architectural or historic interest. The supervisory government department is the National Ministry of Education." "The preservation of Natural Amenities Act (1937) not only provides for the conservation of extensive areas of characteristic Danish landscape beauty, scientific interest, or recreational value; but also provides that no urban development must take place within a certain distance from woods and beaches. The supervisory government department is the National Ministry of State."[29B]

IX. National "Facet" Plans for Housing

A. Sweden -- The development of Swedish housing and physical planning policies are interwoven, and can be traced back to the end of the last

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[28B] P. 70, "Fuselli Report to I.F.H.T.P.," 1937.

[29B] P. 15, "Nielsen Report to I.C.H.T.P.," 1950.

century. The National Building Code of 1874 stipulated for the first time, that every city should have plans regulating the layout of residential sections as well as for streets, market places and public squares. The national government owns extensive land areas adjacent to urban centers which are reserved for future government and administrative buildings, are sold to private and semi-public land and housing developers, and are used as natural wilderness reserves. The national housing supply has certainly been favorably effected by Sweden's "Mother Co-op" (H.S.B.), whose organization is responsible for a majority of the semi-public residential developments.[30B]

B. The U.S.A. -- The American national housing program is managed by the federal government's Housing and Home Finance Administration.

C. Pakistan -- "After the mass influx of Moslem refugees from India, the central government was compelled to assume a new responsibility, i.e. the housing of families of lower income, for whom neither the improvement trusts nor any other building agency, public or private, was providing either land or housing. This recent programme was administered through the provincial rehabilitation departments, and was executed through the national public works departments. In 1952, the central government also launched a government House Building Finance Corporation with power to make direct

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[30B] Pp. 23-32, G. E. Kidder Smith, Sweden Builds (Stockholm: Albert Bonnier, 1950). This was explored in detail in class notes, "Course 4.77: Housing Problems," Professor Charles Abrams, Department of City and Regional Planning, M.I.T., fall term 1957.

loans to home owners up to 80% of house value."[31B]

D. Peru -- "In Peru, we established the Institute of Town Planning, first unofficially, and later officially as an integral part of the University of Engineering (at the national university in the capitol city of Lima). The results could not have been more promising. In the five years (1951-1956) that we have been working, there have been established, through the efforts of the Institute:

1. The national government Bureau of Housing and Planning, which is responsible for drawing up (the official housing and town) plans of all the cities in the country; and

2. the National Housing Board, which is a semi-public agency responsible for settling or alleviating housing problems throughout Peru."[32B]

X. Other Types of National "Facet" Plans

A. National Public Works "Facet" Plans -- Probably the most dramatic national public works programs are those to do with dams and rivers. There is an abundance of such "facet" plans in the world today.

[31B] P. 1, Charles Abrams and Otto Koenigsberger, Report on Housing in Pakistan, (Karachi: United Nations' Technical Assistance Administration, September 14, 1957).

[32B] P. 76, Luis Ortis Zevallos, "The Training of Planners in Latin America," United Nations, Department of Economic and Social Affairs; Housing, Building and Planning Bulletin No. 11: Training for Town and Country Planning. (ST/SOA/Ser. C/11), (New York, November, 1957).

A few samples are:

1. Just recently completed is the joint Canadian - American St. Lawrence Seaway project,

2. in the engineering and financial planning stage is the Egyptian Aswan Dam and irrigation project,

3. and under construction are innumerable dam projects in India and Pakistan.

B. National "Facet" Plans for Regional Development -- Most likely the world's best known regional development project occurred in the U.S.A. during the 1930's administration of President Franklin D. Roosevelt. At that time the national legislature established the Tennessee Valley Authority. This national public corporation was empowered to develop structured facilities and services for flood control, navigation, hydro-electric power, and to promote the region's economic and social development for the benefit of the inhabitants of the T.V.A. area. Many other countries of the world, after official visits to the completed T.V.A. project, have embarked on similar types of national "facet" plans for regional development.

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