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THE HYPOTHESIS OF THE MOBILITY TRANSITION

WILBUR ZELINSKY

SOCIAL scientists are guided in their gropings toward pattern and regularity in human activities by their small hoard of paradigms. In the fields of geography and demography, such broad intellectual designs have been especially scarce.¹ Indeed, there are probably no more than three major geographical paradigms in active use today. The first, which might be called the geographic axiom, so basic and instinctive as to be seldom articulated, is the conviction that there is genuine significance in the spatial patterning of physical and social events on and near the surface of the earth. Next is the notion of the spatial diffusion of innovations, sired jointly by anthropologists and geographers and recently explored with highly interesting results. Finally, geographers have borrowed the principle of least effort, or economic optimization, from economists and have grafted it onto the geographic axiom. This hybridization has spawned a number of hypotheses concerning the territorial arrangement of economic and related activities.

In demography we can discern only two such axiomatic items: the theory of the demographic transition and the so-called laws of migration. The first is the assertion that, on attaining certain thresholds of socioeconomic development, every community will pass from a premodern near-equilibrium, in which high levels of mortality tend to cancel out high levels of fertility, to a modern near-equilibrium, in which low fertility almost matches low mortality but with the decline in births lagging far enough behind the decline in deaths to ensure a substantial growth in numbers during the transitional phase.² The laws of migration, first enunciated by Ravenstein in 1885, later modified by Thomas and Stouffer, and most recently improved and codified

¹ As far as demographic theory is concerned, there has been little recent improvement in the situation described in Rupert B. Vance: *Is Theory for Demographers?* *Social Forces*, Vol. 31, 1952-1953, pp. 9-13. The theoretical landscape in geography is surveyed in David Harvey: *Explanation in Geography* (New York, 1969).

² The demographic transition was apparently introduced into the demographic literature by Warren S. Thompson (Population, *Amer. Journ. of Sociol.*, Vol. 34, 1929, pp. 959-975) and since then has been treated in innumerable articles and books. A general description is to be found in Ralph Thomlinson: *Population Dynamics* (New York, 1965), pp. 12-25. For an excellent theoretical exposition, see Donald O. Cowgill: *Transition Theory as General Population Theory*, *Social Forces*, Vol. 41, 1962-1963, pp. 270-279. The statistical evidence supporting the theory is examined in Maurice S. Satin: *An Empirical Test of the Descriptive Validity of the Theory of Demographic Transition on a Fifty-three Nation Sample*, *Sociol. Quart.*, Vol. 10, 1969, pp. 190-203.

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by Lee,³ are a set of loosely related general empirical statements describing migrational relationships between sources and destinations. After making certain assumptions about degree of attractiveness and repulsion of places of origin and destination and about intervening obstacles and personal factors, Lee offers eighteen hypotheses: five concern absolute volume of migration, six deal with streams and counterstreams of migrants, and seven have to do with characteristics of migrants. When all these have been carefully reviewed, it may be found that most are explicitly migrational cases of the broader principle of least effort, according to which actors reach decisions whether and whither to move on the basis of relative known costs and returns (material and nonmaterial), subject as always to various inertial anchors.

Given the hybrid vigor of the offspring from the union of the geographic axiom with the principle of least effort, further experiments in crossbreeding paradigms would seem worthwhile. I shall argue here that all the assumptions described above are compatible and that their polygamous marriage in the form of the "hypothesis of the mobility transition" may prove fruitful. The fusion of the spatial with the temporal perspective would seem especially intriguing. Indeed, it is surprising how little effort has been made by geographers to treat the demographic transition as a process diffusing outward through space and time.⁴ But perhaps this is understandable in the light of the tepid interest geographers have generally displayed toward developmental phenomena.⁵

What is attempted here is the application of the principle of the spatial

³ E. G. Ravenstein: *The Laws of Migration*, *Journ. Royal Stat. Soc.*, Vol. 48, Part 2, 1885, pp. 167-227, and Vol. 52, 1889, pp. 241-301; Dorothy Swaine Thomas: *Research Memorandum on Migration Differentials*, *Social Science Research Council Bull.* 43, 1938; Samuel A. Stouffer: *Intervening Opportunities: A Theory Relating Mobility and Distance*, *Amer. Sociol. Rev.*, Vol. 5, 1940, pp. 845-867; *idem*: *Intervening Opportunities and Competing Migrants*, *Journ. of Regional Sci.*, Vol. 2, 1960, pp. 1-26; Everett S. Lee: *A Theory of Migration*, *Demography*, Vol. 3, 1966, pp. 47-57.

⁴ The only explicit treatment of this topic of which I am aware is Roy Chung: *Space-Time Diffusion of the Transition Model: The Twentieth Century Patterns*, in *Population Geography: A Reader* (edited by George J. Demko, Harold M. Rose, and George A. Schnell; New York, St. Louis, and elsewhere), pp. 220-239. The fertility phase of the transition is treated spatially by Emilio Casetti and George J. Demko: *A Diffusion Model of Fertility Decline: An Application to Selected Soviet Data, 1940-1965*, *Ohio State Univ., Dept. of Geography, Discussion Paper No. 5*, 1969, and by Gösta Carlsson: *The Decline of Fertility: Innovation or Adjustment Process*, *Population Studies*, Vol. 20, 1966, pp. 149-174. The larger notion is implicit in a series of world maps showing vital indexes at various dates, in Jan O. M. Broek and John W. Webb: *A Geography of Mankind* (New York, London, and elsewhere, 1968), pp. 432, 433, 436, 437, and 442-445.

⁵ The only extensive published discussions of the problems of socioeconomic development by geographers of which I am aware are Norton Ginsburg, edit.: *Essays on Geography and Economic Development*, *Univ. of Chicago, Dept. of Geography, Research Paper No. 62* (Chicago, 1960); *idem*: *Atlas of Economic Development* (Chicago, 1961); Yves Lacoste: *Géographie du sous-développement* (Paris, 1965); and Edward W. Soja: *The Geography of Modernization in Kenya* (Syracuse, N. Y., 1968).

diffusion of innovations to the laws of migration, and specifically to Lee's assertion that "unless severe checks are imposed, both volume and rate of migration tend to increase with time."⁶ The results are set within the same sort of temporal structure that has been developed for the demographic transition, and in accordance with the geographic axiom, coherent spatial entities are identified.⁷ The principle of least effort, though not specifically invoked, is imbedded in much that follows. The hypothesis set forth here is original only to the degree that it makes visible the implicit and joins together a number of ideas already immanent in the literature.⁸ The exposition is almost entirely at the descriptive level; no serious effort is made to plumb the processual depths.

In this reconnaissance voyage the route is both deductive and inductive. The proposed generalizations seem logical in the light of current geographic and demographic doctrine. They also survive testing with what fragmentary evidence is readily accessible, but a more searching examination of a greater range of data is clearly in order.

THE HYPOTHESIS OF THE MOBILITY TRANSITION

The hypothesis of the mobility transition can be expressed most succinctly as follows: *There are definite, patterned regularities in the growth of*

⁶ Lee, *op. cit.* [see footnote 3 above], p. 53.

⁷ The theme of successively more advanced forms of a phenomenon—biological, social, or cultural—moving outward from a generative center and thus creating concentric zones has been developed in the biological and anthropological literature (in essence, the age-area concept), but its only vocal champion among geographers was the late Griffith Taylor. Although he treated the notion vigorously and at some length, most fully perhaps in "Our Evolving Civilization" (Toronto, 1946), he was able to win few, if any, converts.

⁸ Cowgill, *op. cit.* [see footnote 2 above] suggested that the theory of the demographic transition is one of considerable generality and that changes in residential pattern might well be included, but he did not carry through with this idea. The diffusion of new forms of demographic behavior through social space is discussed at some length in James M. Beshers: *Population Processes in Social Systems* (New York, 1967). Kingsley Davis in "The Theory of Change and Response in Modern Demographic History" (*Population Index*, Vol. 29, 1963, pp. 345-366) put forward the notion of a multiphasic response to population growth in developing societies, including the option of outward migration. Interrelations among changes in population size, fertility, and rate of migration are elaborated in Dov Friedlander: *Demographic Responses and Population Change*, *Demography*, Vol. 6, 1969, pp. 359-381. Five sequential stages in the demographic evolution of a community are postulated in Jack P. Gibbs: *The Evolution of Population Concentration*, *Econ. Geography*, Vol. 39, 1963, pp. 119-129, who uses the relative urban and rural rates of change and degree of unevenness in territorial distribution as the basic criteria. In another sequential scheme, which encompasses all major dimensions of modernization (Gino Germani: *Stages of Modernization*, *Internat. Journ.*, Vol. 24, 1969, pp. 463-485), migrational characteristics are listed though not discussed. All the foregoing lack explicit spatial dimensions (with the partial exception of Gibbs). Adumbrations of the notion that the propensity to emigrate to foreign lands displays a wavelike motion through space-time are found in Adna Ferrin Weber: *The Growth of Cities in the Nineteenth Century* (New York and London, 1899), p. 254, and in Brinley Thomas: *Migration and Economic Growth: A Study of Great Britain and the Atlantic Economy* (Cambridge, England, 1954), p. 224.

personal mobility through space-time during recent history, and these regularities comprise an essential component of the modernization process. But it is more useful, perhaps, to offer eight related statements that, taken together, more adequately elucidate the hypothesis. (1) A transition from a relatively sessile condition of severely limited physical and social mobility toward much higher rates of such movement always occurs as a community experiences the process of modernization. (2) For any specific community the course of the mobility transition closely parallels that of the demographic transition and that of other transitional sequences not yet adequately described. A high degree of interaction may exist among all the processes in question. (3) There are major, orderly changes in the form as well as in the intensity of spatial mobility at various stages of the transition—changes in function, frequency, duration, periodicity, distance, routing, categories of migrants, and classes of origin and destination. (4) There are concurrent changes in both form and intensity of social mobility and in the movement of information, and under certain conditions the potential migrant may exercise the option of changing his locus in social space or of exploiting a superior flow of information rather than engaging in a territorial shift. (5) At a fairly high level of generalization, which dampens out minor spatial and temporal irregularities, we can recognize in mobility conditions coherent patterns that propagate themselves onward through time as successive periods and outward through space as concentric zones emanating from successful growth points. (6) The processes in question tend to accelerate in spatial and temporal pace with time, apparently because of the steady accumulation and intensification of causative factors within any given community and because of information and effects transferred from more advanced to less advanced regions. (7) Thus the basic spatiotemporal scenario of change may be preserved, yet be noticeably modified when a region initiates its mobility transition at a late date, so that absolute dating is a significant consideration. (8) Such evidence as we have indicates an irreversible progression of stages.

The progress of a community toward advanced developmental status can be gauged by its control over energy, things, and knowledge, as exercised both individually and collectively, and also by the attainment of personal mobility, that is, a widening range of options for locating and patterning one's life. Obviously, these two attributes are closely related. The two transitional sequences—the demographic and the mobility transitions, plus others yet to be specified—essentially chronicle the trajectory from low to high values. Growth in power can be quite literally construed as mastery

and discharge of great quantities of chemical, kinetic, and nuclear energy. Even more basic is the power to control or to affect strongly the physical and biotic habitat, including human physiology, and to manipulate various social systems through scientific knowledge, an ever more complex technology, and an elaborate network of organizations. Of immediate concern is the fact that through biological knowledge and increasingly effective policing of the environment, modern man has extended control over his own physiology, first in the form of death control and more recently by means of birth control. The resultant series of changes is more accurately termed the "vital transition" than the "demographic transition," since the concept is only concerned with births and deaths, without taking into account other population events and characteristics.

The accretion and manipulation of human power during recent times have attracted much scholarly attention, but the remarkable expansion of personal mobility has been largely overlooked, despite its rich potential for interpreting the larger phenomenon of modernization. The volume of work on migration is considerable,⁹ but it is greatly overshadowed by analyses of fertility and other such popular topics. The essential reasons are to be found in the intrinsic nature of the phenomenon, in definitional problems, and in the difficulties of data procurement and analysis. Given an effective registration system, we can count births and deaths with the greatest of ease. But exactly who is a migrant, and what do we mean by migration? No general consensus is likely for some time, since we are confronted here by a physical-social transaction, not just an unequivocal biological event. Several subsidiary questions must be answered, for example: How far (or how rapidly) need one travel and for how long to be classed as a migrant? What are the purposes of the trip? How different are origin and destination? How do we handle repetitive trips? But the most profound difficulty is the intimate, yet ambiguous, liaison between territorial and social mobility. Clearly one is partly,

⁹ An excellent annotated bibliography of the migrational and other demographic literature through the mid-1950's is available in Hope T. Eldridge: *The Materials of Demography: A Selected and Annotated Bibliography* (New York, 1959), and earlier items are comprehensively and critically covered in Dorothy S. Thomas, *op. cit.* [see footnote 3 above]. Virtually all English-language materials on migration appearing during a recent eight-year period are listed and abstracted in J. J. Mangalam: *Human Migration: A Guide to Migration Literature in English, 1955-1962* (Lexington, Ky., 1968). Current publications in demography are covered in exemplary fashion in *Population Index*. Within the field of geography, the most useful summary statements concerning migration are probably Max. Sorre: *Les migrations des peuples: Essai sur la mobilité géographique* (Paris, 1955); Edgar Kant: *Classification and Problems of Migrations, in Readings in Cultural Geography* (edited by Philip L. Wagner and Marvin W. Mikesell; Chicago, 1962), pp. 342-354; and Broek and Webb, *op. cit.* [see footnote 4 above], pp. 459-480.

but not fully, convertible into the other, so that one can be traded off against the other, up to a point; but the exact nature of the linkages has yet to be worked out.

Genuine migration obviously means a perceptible and simultaneous shift in both spatial and social locus, so that the student cannot realistically measure one kind of movement while he ignores the other. Which family is more migratory, the one transferred 3000 miles across the continent by an employer to be plugged into a suburb almost duplicating its former neighborhood, or the black family that moves a city block into a previously white district? Ideally, we should observe shifts in both varieties of space in tandem, but given the dearth of techniques and data for handling purely social movement, we are forced to rely almost solely on territorial movements as a clumsy surrogate for total mobility. When a truly serviceable index of mobility is fabricated, it will certainly be composite, bringing together measures of several dimensions. The problem is comparable to that of gauging general socioeconomic advancement: no single number will do; a variety of indicators must be viewed simultaneously.¹⁰ Thus when we speak of changes in mobility in this essay, only rough orders of magnitude can be suggested.

THE RECENT HISTORIC TRANSFORMATION

The growth in individual mobility has been spectacular in modernizing societies. If we use sedentary peasant societies as our datum plane, the life patterns of all but a few privileged or exceptional persons are, or were, preordained by circumstances of birth. Options of activities were rigidly constrained by gender and by inherited class, caste, occupation, religion, and location. Barring disaster, the orbit of physical movement was severely circumscribed, and the feasible range of information and ideas was narrow and stagnant, changing almost imperceptibly from generation to generation.

Today, by contrast, many individuals in the most advanced societies, and not merely the lucky, determined, and gifted, are able to shift about with relative impunity in the social space among classes or to comparison shop among jobs and careers. The socioeconomic and behavioral barriers between the sexes have been crumbling; marriage is no longer a life sentence; it is

¹⁰ For examples of such multidimensional approaches to classifying kinds and stages of development, see Brian J. L. Berry: *Basic Patterns of Economic Development*, in Ginsburg, *Atlas of Economic Development* [see footnote 5 above], pp. 110-119; Bruce M. Russett and others: *World Handbook of Political and Social Indicators* (New Haven, 1964), pp. 293-303; Bruce M. Russett: *International Regions and the International System: A Study in Political Ecology* (Chicago, 1967), pp. 36-58; C. E. Black: *The Dynamics of Modernization* (New York, London, and Evanston, Ill., 1966); and Germani, *op. cit.* [see footnote 8 above].

possible to switch without disastrous consequences from one religion to another, to alter political allegiance, or to seek membership in any of a vast array of voluntary associations; and the possibilities for travel or for any of a variety of spatial migrations have multiplied greatly.

But perhaps the greatest of the new mobilities is that of the mind. Perception and thought are no longer tethered to the living memory and to the here and now but have been stretched to virtual infinity. Through such instrumentalities as the printing press, camera, telephone, postal system, radio, television, phonograph, electronic computer, library, museum, school, theater, and concert hall, as well as personal gadding about, there remain no effective boundaries beyond which the nimbler mind cannot penetrate. This intellectual mobility is not just outward to all parts of the earth and the observable universe or backward and forward through time but is into other dimensions as well—the psychological, the esthetic, and the scientific. All these forms of motion are closely interrelated: increasing freedom of spatial movement is both cause and effect of other forms of enhanced mobility. On still another level, it is also true that the two dynamic processes, magnification of power and of mobility, though distinct at their cores, are also vigorously interactional, one feeding heartily on the other.

This newly won freedom of movement in a multidimensional physical-social-psychic space has not been achieved without paying a penalty. Greater mobility means shallower local attachment, and some would argue that rootlessness may be psychologically detrimental. There has been an erosion of kinship and place-dependent social ties; the individual's perception of, and feeling for, his immediate habitat, his whole sense of place, may be disintegrating. This matter is subsidiary to the larger issues of modernization. For all its vast momentum and seeming inevitability, no convincing proof exists that modernization has meant any real gain in the more inward, and presumably genuine, measures of welfare at the individual or social scale.

TERRITORIAL MOBILITY

The concept of territorial mobility—used here as a substitute for the totality of social and physical mobility—calls for close examination. The term “territorial mobility” is comprehensive, combining conventional (that is, residential) migration with what, for lack of a better designation, can be called “circulation.” As generally defined, migration is any permanent or semipermanent change of residence; more meaningfully, perhaps, it is a spatial transfer from one social unit or neighborhood to another, which

strains or ruptures previous social bonds.¹¹ Because of shortcomings in data systems, the migrational movements actually analyzed are usually those that happen to cross census or political boundaries and that intercept the time intervals used by census enumerators. In effect, a considerable fraction of territorial mobility goes unrecorded.

Circulation denotes a great variety of movements, usually short-term, repetitive, or cyclical in nature, but all having in common the lack of any declared intention of a permanent or long-lasting change in residence. Under this rubric, one can include such disparate items as weekend or seasonal movements by students; vacation and weekend travel; shopping trips; hospital and church visits; religious pilgrimages; travel to professional and business conventions; trips by government and business executives, salesmen, athletes, migratory farm workers, and the like; social visits; and much seemingly aimless or fun-seeking cruising by wheelborne youngsters.¹²

The conventional definition of migration may serve after a fashion for the totality of territorial mobility in the initial and intermediate stages of the mobility transition. But the volume, intensity, and nature of circulation in advanced communities is such that there is no realistic alternative to treating all territorial mobility as a single continuum, extending from the shortest, most routine of iterated motions to the most adventurous intercontinental journey.

The most difficult problem in defining mobility has been left for last. Throughout the migrational literature, space is almost always treated as an absolute, with distances between points reckoned as constant. Although this is valid in a physical sense, it is misleading in any functional approach to space.¹³ Recent improvements in transportation technology, combined with a general rise in level of living, have caused the mile to shrink drastically in terms of time or cost or of any index combining the two. At the same time, a great broadening of information fields has contributed further to the implosion of functional space. A logical step in pursuing the mobility transition would be to convert physical space into the functional space of migrants and circulators, probably through some variety of map transformation.¹⁴ But there are other elastic yardsticks to worry about. Are the ways in which

¹¹ Two of the many possible typologies of migration are proposed in Kant, *op. cit.* [see footnote 9 above], and William Petersen: A General Typology of Migration, *Amer. Sociol. Rev.*, Vol. 23, 1958, pp. 246-266.

¹² Theodore Goldberg: The Automobile: A Social Institution for Adolescents, *Environment and Behavior*, Vol. 1, 1969, pp. 157-185.

¹³ I am indebted to my colleague John S. Adams for fueling this train of thought.

¹⁴ This approach is explored in Donald G. Janelle: Spatial Reorganization: A Model and Concept, *Annals Assn. of Amer. Geogrs.*, Vol. 59, 1969, pp. 348-364.

we perceive and evaluate time and people any more immutable than distance is? Can we confidently say that an hour is equivalent to an hour, or one infant to one infant, when one society is being compared with another, or when we look at the same community at different dates? We may be boxed in by the spurious precision of numbers.

The number of potential demographic transitions has not been exhausted by the addition of a mobility transition to the vital (mistakenly known as *the* demographic) transition. The relatively early discovery of the vital transition may have been the natural consequence of its sharp impact on three of the most visible and significant of all statistical indexes, namely, total population, crude birth rate, and crude death rate. An occupational transition, frequently implied in the literature but never fully spelled out, would comprise that series of changes whereby the industrial-occupational structure of premodern societies evolves from heavy concentration in the primary sector to an almost totally different modern mix, the upward shift into secondary, tertiary, and eventually quaternary occupations. Similarly, the literature is strewn with hints of an educational transition. The series of steps from a totally illiterate society to one in which most young adults attend college could be delineated and its relationships to other channels of socioeconomic development explored.

Much could also be gained by charting the progression in forms of morbidity and cause of death from the relatively primitive community to the highly advanced, or the changes in marital and family characteristics. It would fall largely to settlement and urban geographers, who already command much documentary evidence, to outline the residential transition, which might unite census-derived data with details of physical morphology and could also subsume the rank-size rule as one of the terminal conditions.¹⁵ All such transitional sequences seem susceptible to treatment as diffusional phenomena, spreading upward and outward through space-time. Indeed, it seems strange to find so few serious attempts to treat the historical geography of modern urbanization in a diffusional framework by charting the spatial extension of cities and metropolitan areas at the national scale or beyond.¹⁶

¹⁵ There have been at least two experimental efforts in developing a sequential typology of cities: "The 'Seven Ages of Towns' as Exemplified by Toronto, Chicago, London, the Ruhr, Canberra," in Taylor, *op. cit.* [see footnote 7 above], pp. 222-247; and "The Stages of Urban Growth," in Wilbur R. Thompson: *A Preface to Urban Economics* (Baltimore, 1965), pp. 15-18. On a broader scale, sequential stages of change from rurality to vast conurbations are proposed in Constantinos A. Doxiadis: *Ekistics: An Introduction to the Science of Human Settlements* (New York, 1968), and Laurence G. Wolf: *The Metropolitan Tidal Wave in Ohio, 1900-2000*, *Econ. Geography*, Vol. 45, 1969, pp. 133-154.

¹⁶ Useful introductory sketches of the subject are to be found in Kingsley Davis: *The Origin and Growth of Urbanization in the World*, *Amer. Journ. of Sociology*, Vol. 60, 1954-1955, pp. 429-437;

SPATIOTEMPORAL PROGRESSION OF THE VITAL AND MOBILITY TRANSITIONS

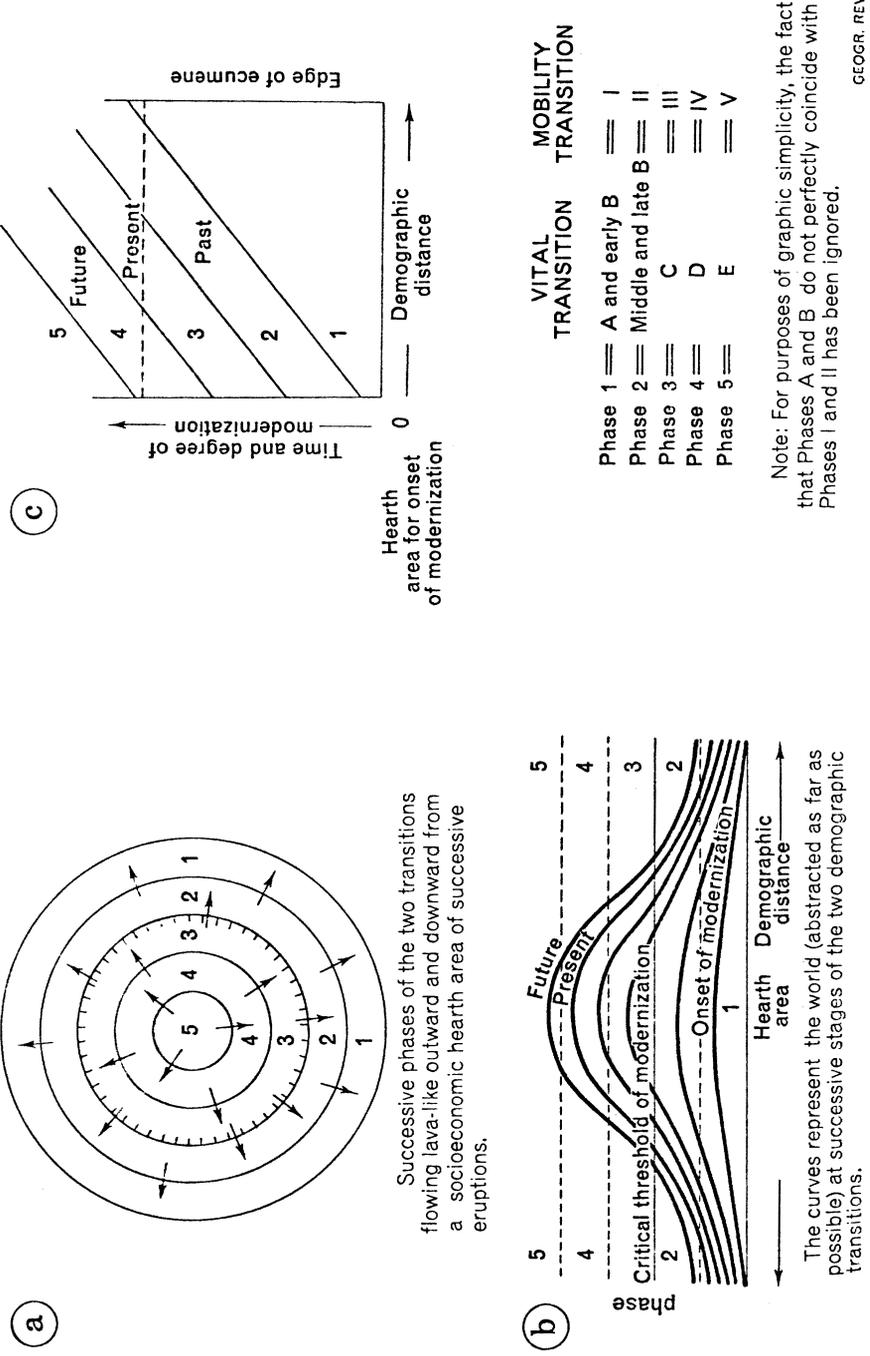


FIG. 1

The various strands of the modernization process represented by the individual transitions are mutually interdependent. The first serious attempt to document this supposition comes from Friedlander, who uses a strictly temporal, economic, and aspatial framework to analyze the interaction between fertility and migrational responses to rural population pressures over the past two hundred years in France, Sweden, and England and Wales.¹⁷ His argument, derived from Davis's hypothesis of a multiphasic response to population growth,¹⁸ is essentially that the timing and rate of decline in fertility, especially among the rural populations of developing societies, are inversely correlated with the number of internal and external migrational opportunities. Friedlander's evidence is persuasive, and it would seem worthwhile to examine other ways in which population dynamics, fertility level, and migration rates may be interconnected and to do so in an explicitly spatial manner.¹⁹

As in all geographical discourse, the question of scale is crucial. The mobility transition is intended as a highly idealized, flexible scheme that affords a general overview of a variety of places and periods. It is aloof from "accidents" or exceptional circumstances; it is of little help in describing or predicting specific patterns of migration or circulation for a particular small area or set of areas over a brief period; it is deliberately vague in indicated distances, elapsed time, and rates. But if geography and history are viewed in extremely soft focus through the lens of the hypothesis, it may have value in whatever broader insights are forthcoming.

THE CHANGING FORMS OF TERRITORIAL MOBILITY

The temporal sequence of a five-stage mobility transition is set forth here in outline form (Table I), subject to the qualifications already mentioned and others to be introduced. A five-stage vital transition is placed in parallel position to indicate contemporaneity (and probable interdependence) be-

Kingsley Davis and Hilda Hertz: *The World Distribution of Urbanization*, *Bull. Internat. Stat. Inst.*, Vol. 33, 1954, pp. 227-243; *idem*: *Urbanization and the Development of Pre-Industrial Areas*, *Econ. Development and Cultural Change*, Vol. 3, 1954-1955, pp. 6-24; and Eric E. Lampard: *Historical Aspects of Urbanization*, in *The Study of Urbanization* (edited by Philip M. Hauser and Leo F. Schnore; New York, London, and Sydney, 1965), pp. 519-554.

¹⁷ Friedlander, *op. cit.* [see footnote 8 above].

¹⁸ Davis, *The Theory of Change and Response in Modern Demographic History* [see footnote 8 above].

¹⁹ Evidence has also been produced to show that the internal dynamics of a demographic system passing through the transitional experience are cybernetically controlled, aside from any exogenous factors, so that mortality decline may ultimately trigger a major shrinkage in fertility (Harald Frederiksen: *Feedbacks in Economic and Demographic Transition*, *Science*, Vol. 166, 1969, pp. 837-847).

TABLE I—TWO SEQUENTIAL SPATIOTEMPORAL PROCESSES AMONG MODERNIZING POPULATIONS

THE VITAL TRANSITION	THE MOBILITY TRANSITION
<p>PHASE A—<i>The Premodern Traditional Society</i></p> <ol style="list-style-type: none"> (1) A moderately high to quite high fertility pattern that tends to fluctuate only slightly (2) Mortality at nearly the same level as fertility on the average, but fluctuating much more from year to year (3) Little, if any, long-range natural increase or decrease 	<p>PHASE I—<i>The Premodern Traditional Society</i></p> <ol style="list-style-type: none"> (1) Little genuine residential migration and only such limited circulation as is sanctioned by customary practice in land utilization, social visits, commerce, warfare, or religious observances
<p>PHASE B—<i>The Early Transitional Society</i></p> <ol style="list-style-type: none"> (1) Slight, but significant, rise in fertility, which then remains fairly constant at a high level (2) Rapid decline in mortality (3) A relatively rapid rate of natural increase, and thus a major growth in size of population 	<p>PHASE II—<i>The Early Transitional Society</i></p> <ol style="list-style-type: none"> (1) Massive movement from countryside to cities, old and new (2) Significant movement of rural folk to colonization frontiers, if land suitable for pioneering is available within country (3) Major outflows of emigrants to available and attractive foreign destinations (4) Under certain circumstances, a small, but significant, immigration of skilled workers, technicians, and professionals from more advanced parts of the world (5) Significant growth in various kinds of circulation
<p>PHASE C—<i>The Late Transitional Society</i></p> <ol style="list-style-type: none"> (1) A major decline in fertility, initially rather slight and slow, later quite rapid, until another slowdown occurs as fertility approaches mortality level (2) A continuing, but slackening, decline in mortality (3) A significant, but decelerating, natural increase, at rates well below those observed during Phase B 	<p>PHASE III—<i>The Late Transitional Society</i></p> <ol style="list-style-type: none"> (1) Slackening, but still major, movement from countryside to city (2) Lessening flow of migrants to colonization frontiers (3) Emigration on the decline or may have ceased altogether (4) Further increases in circulation, with growth in structural complexity
<p>PHASE D—<i>The Advanced Society</i></p> <ol style="list-style-type: none"> (1) The decline in fertility has terminated, and a socially controlled fertility oscillates rather unpredictably at low to moderate levels (2) Mortality is stabilized at levels near or slightly below fertility with little year-to-year variability (3) There is either a slight to moderate rate of natural increase or none at all 	<p>PHASE IV—<i>The Advanced Society</i></p> <ol style="list-style-type: none"> (1) Residential mobility has leveled off and oscillates at a high level (2) Movement from countryside to city continues but is further reduced in absolute and relative terms (3) Vigorous movement of migrants from city to city and within individual urban agglomerations (4) If a settlement frontier has persisted, it is now stagnant or actually retreating (5) Significant net immigration of unskilled and semiskilled workers from relatively underdeveloped lands (6) There may be a significant international migration or circulation of skilled and professional persons, but direction and volume of flow depend on specific conditions (7) Vigorous accelerating circulation, particularly the economic and pleasure-oriented, but other varieties as well

TABLE I—Continued

THE VITAL TRANSITION	THE MOBILITY TRANSITION
<p>PHASE E—<i>A Future Superadvanced Society</i></p> <p>(1) No plausible predictions of fertility behavior are available, but it is likely that births will be more carefully controlled by individuals—and perhaps by new sociopolitical means</p> <p>(2) A stable mortality pattern slightly below present levels seems likely, unless organic diseases are controlled and lifespan is greatly extended</p>	<p>PHASE V—<i>A Future Superadvanced Society</i></p> <p>(1) There may be a decline in level of residential migration and a deceleration in some forms of circulation as better communication and delivery systems are instituted</p> <p>(2) Nearly all residential migration may be of the interurban and intraurban variety</p> <p>(3) Some further immigration of relatively unskilled labor from less developed areas is possible</p> <p>(4) Further acceleration in some current forms of circulation and perhaps the inception of new forms</p> <p>(5) Strict political control of internal as well as international movements may be imposed</p>

tween adjacent segments of the two columns, even though no suggestion of absolute date or duration can be offered. The model is set forth in highly schematic fashion in Figure 1, which shows the mobility and the vital transitions as a kind of outward spatial diffusion of successively more advanced forms of human activity. The verbal (or temporal) and the diagrammatic (or spatial) aspects of the model are complementary, indeed inseparable. Although both transitions are real-world phenomena, representing incremental power and mobility among modernizing communities, their rather arbitrary segmentation into phases is done largely to facilitate discussion. There is nothing sacrosanct about the number, identification, or mutual boundaries of these phases. Indeed, a refinement in periodization is almost certain if the hypothesis is found to merit further attention.

The several different forms of mobility suggested in Table I would appear to vary considerably through time in their relative volumes and rates. Comparative time profiles for these rates are sketched in Figure 2. The progression of five phases of spatial mobility is indicated for an ideal nation (one that averages out the demographic history of the whole universe of currently advanced countries), in which the potential migrant enjoys a full range of options. In addition, the magnitude of movement that might have occurred but was obviated by the recent availability of superior transport and communications is hypothesized in Figures 2*F* and *G*. In all cases the vertical scale is nonnumerical, since only the roughest order of magnitude can be indicated. It is also meant to show total movement—that is, the algebraic sum of inward and outward shifts—rather than just net values. The first three curves (Figs. 2*A*, *B*, and *C*) largely chronicle the rural exodus among developing societies; all three curves dwindle sharply, and the movement

toward internal frontiers vanishes completely, as a country progresses toward Phase IV.

The peaking of international and frontierward movements somewhat earlier than the peaking of countryside to city movements would seem at first to violate common sense, since they usually involve greater physical distances. However, scattered evidence and the deeper logic of socioeconomic history tend to support this scheme. Assuming that some adventurous migrants had established firm beachheads in a foreign land or along a frontier and started a flow of information back to the source region, the transfer to a comparably rudimentary economy in a far locality might mean less dislocation in social space than transfer to a nearby city. During the earlier phases of the mobility transition, the demand for workers at the more advanced occupational levels would have been quite moderate in the growing cities, with a correspondingly small supply in the countryside. A redundant rural labor force would then have found a better market for its services in the agricultural and extractive industries of frontier and other nonurban zones in domestic and foreign settings.²⁰ Later, of course, the situation changed. A sharp rise in urban-to-urban migration and in aggregate circulation during Phases II and III, with a subsequent deceleration or leveling off, is implied by the available information.

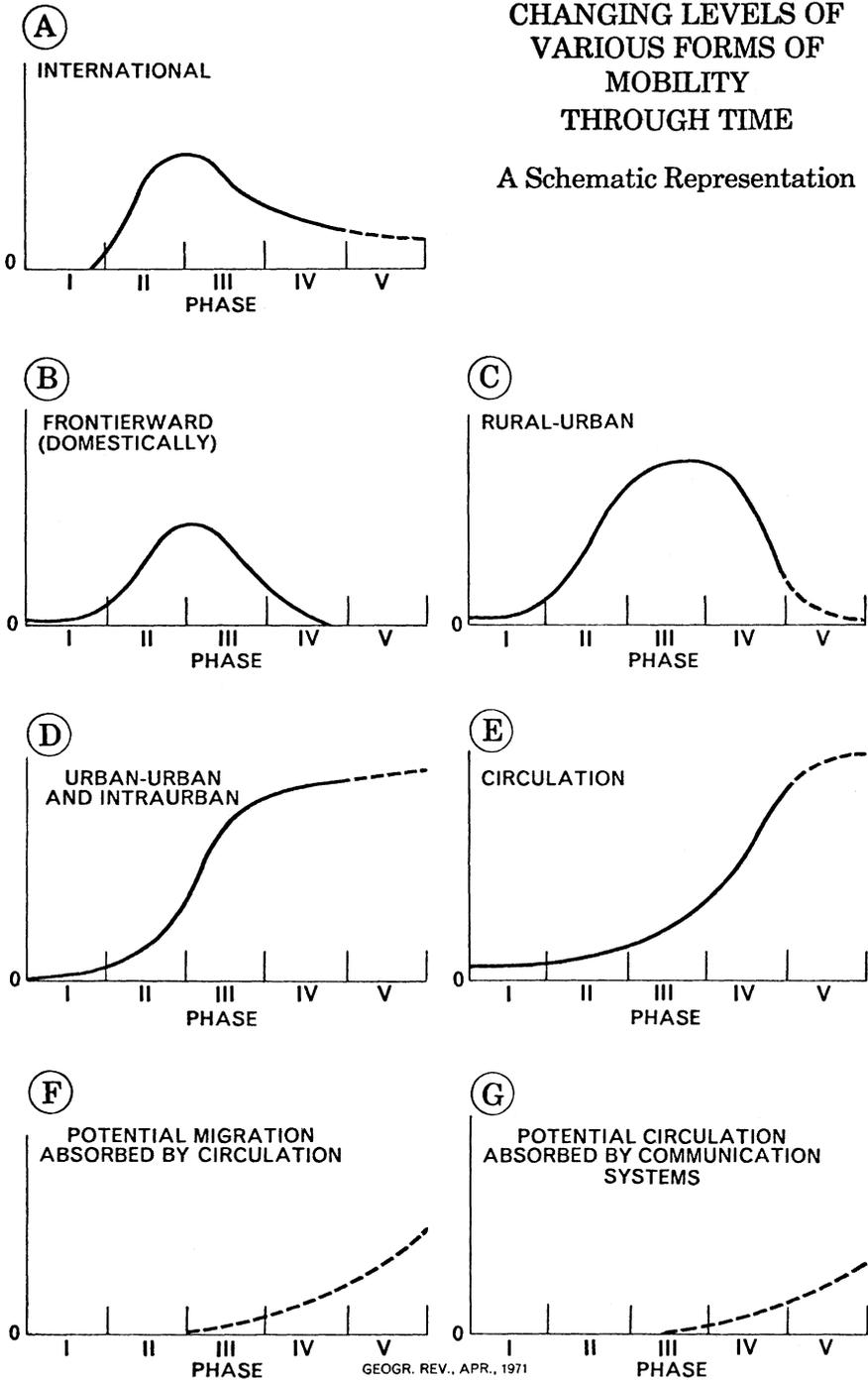
The time profile for migration obviated by improved means for circulating people is hypothetical. The empirical evidence may eventually confirm the speculation that during Phase III and later the broadening out of the circulator's daily cruising range has offered so many new social and economic options that many potential switches in residence were aborted.²¹ If such has been the case in the recent past, more of the same can be expected in the near future. Similarly an even greater amount of migration and circulatory movement may be cancelled out by better communications, as travel is rendered redundant by more efficient transmission of messages for business, social, and educational purposes. For example, the average weekly cinema attendance in the United States has declined from a peak figure of 110 million in 1930

²⁰ Census data for the 1810-1820 period in the United States strongly suggest that something of this sort happened. Because of depressed business conditions in the Atlantic Seaboard cities, the overall urban growth rate fell below the rural. It is likely that rural-to-rural movements, many toward the frontier, far exceeded rural-to-urban movements. The same pattern seems to have materialized in Costa Rica during the 1950's, when a rapidly expanding settlement frontier may have drawn more rural migrants than the few cities did.

²¹ For detailed information on the widening areal range and increasing intensity of labor commutation through time, see Robert E. Dickinson: *The Geography of Commuting: The Netherlands and Belgium*, *Geogr. Rev.*, Vol. 47, 1957, pp. 521-538; and James E. Vance, Jr.: *Labor-Shed, Employment Field, and Dynamic Analysis in Urban Geography*, *Econ. Geography*, Vol. 36, 1960, pp. 189-220.

CHANGING LEVELS OF VARIOUS FORMS OF MOBILITY THROUGH TIME

A Schematic Representation



GEOGR. REV., APR., 1971

FIG. 2

to 46 million in 1965, in large part because of highly effective competition from television. As a result a considerable number of passenger-miles (or pedestrian-miles) have been subtracted from current circulatory movements. The volume of such vicarious motion promises to increase sharply in the next few years.

PHASE I OF THE MOBILITY TRANSITION

The mobility transition begins with the set of conditions characteristic of medieval Europe or Japan and of much of the contemporary underdeveloped world. The migratory practices of hunting-and-gathering folk or cultivators at the tribal level have been so diverse that generalization seems futile. Moreover, it is unnecessary, since without exception genuine progress toward modernization has been initiated only by fairly dense populations of sedentary farmers, among whom a few small cities may be interspersed, or by emigrants from such nuclear developmental zones. During Phase I genuine migration—that is, movement across appreciable physical and social intervals—was an uncommon occurrence. Any detachment from one social unit to join another with which no regular intercourse took place was usually of a marital or martial nature. Some circulation might occur, but normally within a well-trodden social space—for example, the daily journey to field, pasture, fishery, or quarry, trips to fairs, shrines, and courts, or the rather more extended sojourns of apprentices and students.²² The only persons freely to cross major social boundaries would be aristocrats, religious pilgrims and scholars, merchants, warriors, criminals, sailors, and so on, some of whom might elect to become full-fledged migrants or expatriates. Essentially, then, the universe of premodern, traditional communities was one of an array of cells firmly fixed in space with rather strong, if invisible, membranes surrounding each unit. Given the sturdiness of social ties, low levels of transport and communication technology, the sharply circumscribed mental horizons, and the minimal disposable incomes of most persons, it is scarcely surprising to find little beyond the most localized territorial mobility.

Evidence for the foregoing statements is patchy and imperfect, but it does have cumulative weight. Recently, selected parish and various government records for medieval and early-modern England, France, the Netherlands, and other European lands have been analyzed with diligence and ingenuity to determine the demographic structure and dynamics of these countries. Al-

²² Edward A. Wrigley, edit.: *An Introduction to English Historical Demography from the Sixteenth to the Nineteenth Century* (New York and London, 1966), pp. 17-10.

though the results shed light on such topics as fertility, mortality, marital pattern, and household composition, data on migration have been only fragmentary.²³ But these precensus morsels are of some interest and tend to bear out the points stated above.

The situation is roughly comparable in those underdeveloped countries with reliable census materials covering Phase I and entrance into Phase II. Zachariah found that net migration of persons among the states of India from 1901 to 1911 was only 817,000, or about 0.4 percent of the national population in 1911.²⁴ Kingsley Davis contrasts the 3.6 percent of Indians living outside the province or state of birth in 1931 with the 1940 figure of 22.4 percent of the native United States population living outside the state of birth. "Indeed, . . . the percentage living outside the *district* of birth was only 9.8 in India. So the movement between the Indian districts is not half so great as the movement between the American states, measured in the same terms, despite the fact that the latter are on the average more than 17 times as large as the Indian districts." He concludes that "the population of the subcontinent, like that of most peasant regions, is relatively immobile."²⁵ Both Zachariah and Davis produced abundant evidence that this low mobility pattern persisted at least until 1941.

A similar picture of a spatially stable peasant society lasting as late as 1920 is drawn for Japan by Irene Taeuber.²⁶ The relatively good demographic data for Taiwan during the Japanese occupation show that, at least before World War II, migration was inconsequential, except into the few larger cities. In 1930 only 3.7 percent of the rural residents were living in other than their native prefectures.²⁷ Similarly, an analysis of the 1946 and 1953 censuses of

²³ Indeed, some of the more substantial contributions in this field barely mention migration. See, for example, Josiah Cox Russell: *British Medieval Population* (Albuquerque, N. Mex., 1948); D. V. Glass and D. E. C. Eversley, eds.: *Population in History: Essays in Historical Demography* (Chicago, 1965); and Wrigley, *op. cit.* [see footnote 22 above]. Wrigley, in writing about English demography from the sixteenth century to the nineteenth, asserts that "the great bulk of migratory movements was over small distances of less than seven or even five miles" (p. 105), and that virtually all marriage partners were located within fifteen miles of each other (pp. 21-22). A study of five English parishes indicates that during the period 1754-1843 (Phase II of our transition?) average distance between residences of marriage partners living in different parishes was only 2.9 miles, and only 2.4 percent were separated by more than thirty miles (A. Constant: *The Geographical Background of Inter-Village Population Movements in Northamptonshire and Huntingdonshire, 1754-1943*, *Geography*, Vol. 33, 1948, pp. 78-88). During the next hundred years (1844-1943), the corresponding values were 12.6 miles and 15 percent.

²⁴ Kunniparampil C. Zachariah: *A Historical Study of Internal Migration in the Indian Sub-Continent, 1901-1931* (New York, London, and elsewhere, 1964), pp. 194-195.

²⁵ Kingsley Davis: *The Population of India and Pakistan* (Princeton, N. J., 1951), pp. 107 and 122.

²⁶ Irene B. Taeuber: *The Population of Japan* (Princeton, N. J., 1958), p. 123.

²⁷ George W. Barclay: *Colonial Development and Population in Taiwan* (Princeton, N. J., 1954), p. 113.

Ceylon failed to show more than an insignificant amount of internal migration.²⁸ It is noteworthy that in these countries, and probably in many other underdeveloped lands, a rapid, massive buildup in rural numbers occurred well before any major surge in mobility rates. The slack in the traditional rural economy may have been sufficient to permit substantial growth in the labor force before saturation caused a spilling outward of the unemployable. In effect, then, the later part of Phase I of the mobility transition overlaps the opening episodes of Phase B of the vital transition.

TEMPORAL TRENDS AND SPATIAL PATTERNS DURING PHASE II

The onset of modernization (or more precisely the onset of major change in the reproductive budget in Phase B, along with a general rise in material welfare or expectations and improvements in transport and communications) brings with it a great shaking loose of migrants from the countryside. This traumatic social event first occurred in Great Britain and appeared shortly thereafter in mainland northwestern Europe. Rapid growth in rural population, changes in agricultural landholding and production systems, and a perceived lack of local economic opportunity impelled mounting numbers of individuals to confront a series of choices. If the farmer and his family had neither inclination nor opportunity to desert the rural locality, they had no alternative but to adopt a more labor (or capital) intensive mode of production that yielded more food and perhaps more cash per unit area, thus continuing the evolutionary sequence of land uses postulated by Boserup.²⁹ The terminal stage of this trend would be the extremely intensive exploitation of land by largely traditional methods that Geertz has termed "agricultural involution," so beautifully exemplified in Java.³⁰ A less common strategy would be to combine part-time employment on the farm with work in town, a form of commutation that may precede later migration.

But the most effective solution in rural societies passing through Phase II seems to be out-migration. Four types of destination have been available to the potential migrant: cities in the native country; cities in alien lands with an expanding economy; rural settlement frontiers, if these are to be found in one's own land; and the pioneer zone in a hospitable foreign country. Within the native country, this phase is also the time of great urban growth, of rapid

²⁸ S. Vamathevan: *Internal Migration in Ceylon, 1946-1953*, *Ceylon Department of Census and Statistics Monograph No. 13* (Colombo, 1960), pp. 36-37.

²⁹ Ester Boserup: *The Conditions of Agricultural Growth* (Chicago, 1965), pp. 77-87.

³⁰ Clifford Geertz: *Agricultural Involution: The Process of Ecological Change in Indonesia* (Berkeley and Los Angeles, 1963).

enlargement of earlier centers and the founding of new industrial and commercial metropolises. In the past such places were capable of absorbing all or most of the surplus rural folk, at least after the earlier stages of Phase II. Although firm data are scarce, circulation of a predominantly economic nature may also increase sharply during this period.

Phase II of the mobility transition, after its seventeenth-century inception in the North Sea countries, has swept outward at an accelerating pace, until by the mid-twentieth century only a few remote, primitive communities remain untouched by it (or by the somewhat earlier Phase B of the vital transition, with its drop in mortality and sudden spurt in population). When the available statistics are collected and analyzed, a case of contagious diffusion should emerge, with the propensity to migrate seen as a kind of prairie fire burning its path across the map. Thus from the point of ignition in England the zones of restless Europeans seeking permanent or temporary lodgment in distant localities, especially in North America, moved rapidly eastward across Europe (following the gentlest cultural, economic, and topographic gradients?) and somewhat more tardily to the north and south. By the mid-twentieth century the impulse to move outward or cityward had engulfed central Russia, the Ukraine, and the southern reaches of the Iberian, Italian, and Balkan peninsulas. In reverse image, the flight from the North American countryside began in late eighteenth-century New England, then spread westward and southward until now the movement characterizes virtually all of rural Anglo-America.

We are at a considerable statistical disadvantage in plotting changing levels of migration through space and time on the international scale, and specifically those for Phases II and III. The refractory problem of defining migration is greatly compounded by the nature, sizes, and shapes of areas for which data are collected and the time periods for which they are available. There is relative consistency in defining and counting persons who cross international borders; on the domestic scene, however, migrational queries may cover any period between birth and the present. The chance that a migration will be noted rises as the size of the areal unit decreases. In addition, the shape of the boundary and its location with respect to potential migrants introduce formidable complications in computing the odds that change in residence will be officially registered. The size and administrative level of reporting areas differ so greatly from country to country that comparisons are futile. In short, Table II must be taken with a large grain of salt.

If allowance is made for nonequivalence among reporting units, then the

progression of values through space and time among countries at varying levels of development (Table II) clearly does not contradict the hypothesis. If the analysis is narrowed to individual European countries, an even stronger case can be made for significant increases in internal migration during modernization.³¹

The situation was quite different in overseas territories colonized by large numbers of European settlers. These "Neo-European" countries obviously

TABLE II—PERCENTAGE OF POPULATION IN SELECTED PLACES
LIVING IN ADMINISTRATIVE SUBDIVISION OF BIRTH, BY SMALLEST AVAILABLE REPORTING AREA

Taiwan, 1930 (prefecture)	96.3%	Fiji Islands, 1956 (province)	75.0%
Fiji Islands, 1921 (village)	95.0	Panama, 1960 (district)	71.9
Soviet Union, 1926 (region)	92.6	Jamaica, 1960 (parish)	69.2
Nicaragua, 1950 (department)	89.1	Costa Rica, 1963 (canton)	66.0
Ceylon, 1946 (district)	88.2	Japan, 1930 (commune)	62.0
Guatemala, 1950 (department)	88.0	Netherlands, 1930 (commune)	61.0
Ceylon, 1953 (district)	86.7	Belgium, 1930 (commune)	57.0
Philippines, 1960 (province)	84.0	Hungary, 1949 (commune)	56.8
Fiji Islands, 1946 (village)	78.0	Massachusetts, native population, 1895 (town)	51.5
Yugoslavia, 1931 (commune)	78.0	Switzerland, 1941 (commune)	44.3
Greece, 1928 (commune)	76.0	United States, 1958 (city or county)	25.7

Sources: Official census publications.

never experienced Phase I of the mobility transition, and at the national scale mobility incident on an advancing settlement frontier might so dovetail into the later cityward flow from older, well-settled rural tracts that the two curves would tend to cancel out each other. It is reassuring to discover that, despite this complication and the extraordinary size of the areas in question, the Canadian birth-residence data support the hypothesis.³²

The scattered evidence supports the thesis that a propensity to migrate was initiated in the most advanced socioeconomic zones and then radiated outward into less advanced, less accessible regions. As already suggested, this is most obvious at the international scale in the history of an "emigration fever" that first blazed across the map of Europe and later leaped to Latin America and Africa, which are exporting migrants to Anglo-America and Europe in increasing numbers.³³ Statistics on national origin for countries

³¹ The nineteenth-century trend is clear in those nations for which Weber gathered data (*op. cit.* [see footnote 8 above], p. 252). The longest statistical time series bearing on this topic are those computed by Friedlander for Sweden and for England and Wales, dealing with estimated net migration by decade for the rural population only (*op. cit.* [see footnote 8 above], pp. 372 and 374).

³² Morris C. Urquhart and K. A. H. Buckley, eds.: *Historical Statistics of Canada* (Toronto and London, 1965), p. 21.

³³ A "fever chart" of intercontinental migration is presented in W. S. Woytinsky and E. S. Woytinsky: *World Population and Production: Trends and Outlook* (New York, 1953), p. 74.

experiencing major in-movements, principally Brazil, Argentina, Australia, Canada, and above all the United States, clearly demonstrate this diffusional effect, especially when converted into map form.³⁴

An outward spatial-temporal propagation of higher mobility can also be documented in some countries. Cairncross notes the peaking of out-migration from rural areas during the 1870's in southern England, while maximum rates were reached some ten years later in the north, thus closely emulating the pattern set by fertility rates.³⁵ The mapping of net migration for Scottish counties in 1851, 1901, and 1951 shows a distinct shift outward from the more advanced urban and agricultural areas toward the remoter districts as migrational activity accelerated.³⁶ Irene Taeuber writes of Japan during the pre-1920 period, "the exodus of the native-born had been greatest from prefectures adjacent to or near great cities, least in the most remote prefectures. Apparently isolation barred knowledge of opportunities elsewhere at the same time that it increased the difficulties of movement."³⁷

The 1950 Czechoslovakian data point to sharp differentiation in levels of internal migration in the relatively advanced western Czech regions and in the remoter, less developed east, with the former showing more mobility.³⁸ This migrational gradient probably represents the advancing front of Phase III as it moved eastward from Western Europe and replaced a retreating Phase II area. In an earlier atlas of Czechoslovakia four maps that detail specific aspects of internal migration in 1921³⁹ show a decided contrast between the mobile Czechs and the stay-at-home Slovaks and Ruthenians. The maps of emigration to foreign lands, however, portray a complete reversal, with quite low rates for Bohemia and Moravia and notably high rates for most of Slovakia and Ruthenia. Evidently the impulse to migrate had hit a burgeoning eastern Czechoslovakian population well before 1921, but for a Slovak economic opportunities were easier to come by in the United States, Canada, Argentina, and France than in nearby Bohemia. In western

³⁴ See, for example, Charles O. Paullin: Atlas of the Historical Geography of the United States (edited by John K. Wright), *Carnegie Instn. Publ. No. 401*, 1932, plate 70.

³⁵ A. K. Cairncross: Internal Migration in Victorian England, *Manchester School of Economic and Social Studies*, Vol. 17, 1949, pp. 75-77.

³⁶ R. H. Osborne: The Movements of People in Scotland, 1851-1951, *Scottish Studies*, Vol. 2, 1958, pp. 33-40.

³⁷ Taeuber, *op. cit.* [see footnote 26 above], p. 124. A similar pattern has also been described for total territorial mobility in Sweden (Dorothy Swaine Thomas: Social and Economic Aspects of Swedish Population Movements, 1750-1933 [New York, 1941], p. 294).

³⁸ Waller Wynne, Jr.: The Population of Czechoslovakia, *Internatl. Population Statistics Repts. Ser. P-90*, No. 3, U. S. Bureau of the Census, 1953, p. 61.

³⁹ "Atlas Republiky Československé" (Prague, 1935), plate 23.

Czechoslovakia, by contrast, the maturation of the secondary and tertiary sectors made vigorous internal migration more rational than flight to alien lands.

Almost exactly the same spatiotemporal ordering of external and internal migration emerges from the data for Italy.⁴⁰ Again the evidence argues for an emigratory wave that precedes the buildup in internal migration. The abruptness of the onset of both movements in southern Italy is noteworthy; the first occurred in the 1880's, and the other between 1926 and 1935. This sudden outpouring of emigrants may have been repeated elsewhere, including northern Italy where an escalation in mobility antedates the tabulation.

Cartographic documentation can also be found for what appears to be the close of Phase II. A series of four maps showing net migration in the Netherlands during four intervals, stretching from 1840 to 1967, depicts the outward progression of districts with negative values, which are now restricted to the far northeast and southwest.⁴¹ The excellent Swedish demographic data for 1881-1890, 1891-1900, 1901-1910, and 1946-1950 indicate a general northward retreat of the zones of net loss and a secondary retreat from Stockholm and vicinity.⁴² Another series of maps showing "Number of Emigrants" from Sweden for 1861-1880, 1881-1900, 1901-1920, and 1921-1930 reveals a complex pattern through space and time but again with a general movement of the main source areas for overseas migrants toward the northern and west-central tracts.⁴³ Mapping of Greek data on rural migration and on total emigration between 1956 and 1962 reveals the same general trends—positive values limited to immediate metropolitan peripheries and the strongest negative values in the remoter parts of the north and in the southern Peloponnesus.⁴⁴

The outward spread of increasing rural mobility during Phases II and III of the mobility transition is indirectly confirmed by looking at the changing size of the rural population. A cartographic presentation of the date at which this value began to decline has been published for the United States by county over the period 1790-1960.⁴⁵ Although the areal pattern is complex, the

⁴⁰ "Un secolo di statistiche italiane nord e sud, 1861-1961" (Associazione per lo Sviluppo dell'Industria nel Mezzogiorno; Rome, 1961), p. 122; and *Annali di Statistica, Anno 94*, Istituto Centrale di Statistica, Rome, 1965, Ser. VIII, Vol. 17, p. 673.

⁴¹ "Atlas van Nederland" (The Hague, 1960-), plate XI-4.

⁴² "Atlas över Sverige" (Stockholm, 1953-), plates 55-56.

⁴³ *Ibid.*, plates 57A-58A.

⁴⁴ "Economic and Social Atlas of Greece" (Athens, 1964), pp. 216-217.

⁴⁵ Wilbur Zelinsky: Changes in the Geographic Patterns of Rural Population in the United States, 1790-1960. *Geogr. Rev.*, Vol. 52, 1962, pp. 492-524. A similar trend has been demonstrated in tabular fashion on an international scale in *idem*: Rural Population Dynamics as an Index to Social and Economic Development: A Geographic Overview, *Sociol. Quart.*, Vol. 4, 1963, pp. 99-121.

sequential maps unmistakably suggest a series of widening concentric arcs of incipient rural decline starting in the Northeast. These decreases result, of course, from a downturn in reproductive change, and especially in fertility, following or combined with a rise in out-migration. The significant correspondence between fertility decline and the rural exodus in the United States during its Phase III (1880–1930 for most of the country) later vanishes; during the 1940–1960 period there appears to be no meaningful correlation between the two. Nonetheless, although the beginning of a turnabout in rural numbers may occur anytime during Phase II, III, or IV, the general spatial structure of rural population change is consistent with our hypothesis. The mapping of total population change for Canada during the periods 1851–1901 and 1901–1951 shows the same westward pulsation of a zone of decrease.⁴⁶

THE ADVANCE TOWARD PHASE III

Phase II of the mobility transition and Phase B of the vital transition, it must be stressed again, have behaved like world pandemics, spreading rapidly and easily almost everywhere when the first readily portable elements of modernization began to be broadcast around the world. The present underdeveloped regions are, in fact, in a condition of early, incomplete, and dangerously unbalanced modernization. Symptomatic of this unbalanced state is the disparity between a partly modernized mortality regime and a still largely traditional fertility regime, and between a set of strong migrational “pushes” and “pulls” that are much too weakly compensatory on either the domestic or the international scale.

From this point the discussion bifurcates into a recital of events already acted out, or still progressing, in the advanced countries and those that may come to pass in the less advanced areas. If we assume, none too realistically, that no major military or ecological disaster will occur, the sequence may be sketched diagrammatically (Fig. 3). Obviously, the critical question is whether, why, and how a community can generate that mysterious impetus needed to spring upward along the developmental ladder to the critical rung represented by Phase III of the mobility transition or by Phase C of the vital transition. Recent history strongly indicates that achievement of Phase III automatically induces Phase IV at a later date—and, possibly, the yet unrealized Phase V. We do not yet know what ensues in terms of mobility or other phenomena when a society has let Phase II (or B) run its course and then experiences unbearable population pressures on available resources, but an

⁴⁶ “Atlas of Canada” (Ottawa, 1957), plate 49.

abundance of case histories may accumulate during the 1970's and 1980's. For the countries that fail to scale the slope, we designate a deliberately vague purgatory entitled "demographic relapse," with unspecified vital and migrational characteristics.

Efforts have recently been made, some on a large scale, to initiate significant fertility reduction in developing regions somewhat in advance of the

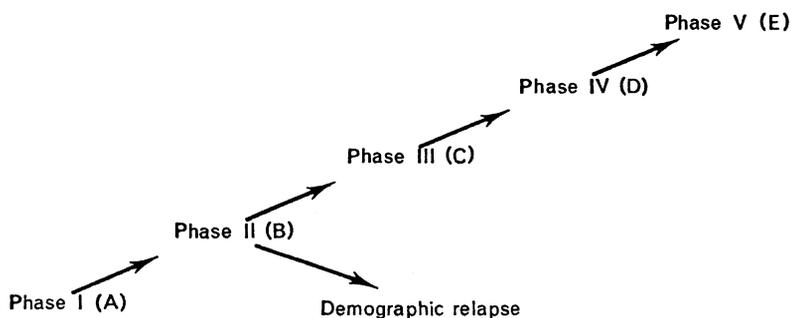


FIG. 3

full consummation of a general developmental program. The evidence from such experiments, and also concerning the possibility of spontaneous changes in fertility behavior caused by population pressures, is just beginning to be assembled and evaluated.⁴⁷ Tentative answers to the feasibility of a small-family pattern before full modernization may soon be available.

The spatial progression of Phase II of the mobility transition, or of Phase B of the vital transition, or of subsequent stages, has not been solely outward from one isolated center. If an analogy with the history of a malignant tumor is in order, there has indeed been a massive invasion into neighboring tissues from the primary seat of biological derangement, but well along in this process daughter colonies of tumorous cells have been transported to distant tracts of the body via the circulatory system. In the case of the mobility transition, transmission may be effected either by large-scale emigration, as into the neo-European lands of the United States, Canada, middle-latitude South America, Siberia, South Africa, Rhodesia, Israel, Australia, and New Zealand, or by means of ideas and institutions, as into Japan and more recently into Taiwan, Hong Kong, North and South Korea, Puerto Rico, and

⁴⁷ The recent situation is comprehensively reviewed in Donald J. Bogue, edit.: *Progress and Problems of Fertility Control around the World*, *Demography*, Vol. 5, No. 2, 1968; and the desirability and effectiveness of present or potential fertility-reduction programs are surveyed in Bernard Berelson: *Beyond Family Planning*, *Population Council Studies in Family Planning* No. 38, 1969.

apparently northern Mexico. In the neo-European case, the colonized areas are, in effect, simple domestic bulgings out from older nuclei, as was literally the case with the Great Russian intrusion into Siberia, the Ukraine, the Caucasus, and Central Asia. The interposition of an ocean, as between Great Britain and British America or between France and formerly gallicized Algeria, does not essentially alter the topology.

In the case of developing lands, the regional and national metropolis, frequently of recent origin, seems to function as the advanced outpost of the modernization process. In these cities, interposed as they are between two worlds, higher mobility and death control are adopted and then flow outward into the traditional (Phase I) countryside. Subsequently, declining fertility may work its way outward spatially and downward socially. The preconditions for the consummation of this process are not at all clear.

In further work with this hypothesis, it will be necessary to specify the special tracks followed in zones colonized by advanced communities as compared with the relatively passive situations in the underdeveloped world and to distinguish both from the seminal zones of socioeconomic development with their strong historical and spatial continuity. A highly schematic suggestion of the ways in which the successive stages of the mobility and vital transitions move through space and time is given in Figure 4.

The migratory and circulatory currents of Phases III and IV are much more complex than those of Phase II, which are simply one great rural stampede funneled into a variety of paths. But however varied their contents, each phase represents a major gain in aggregate territorial mobility. In Phase III most of the movements characteristic of the earlier period persist but are much diminished; indeed, internal residential migration may begin to decelerate, then hover about a fairly high plateau. Thus in the United States from 1880 to 1960 the percentage of the total native population residing in other than the natal state has fluctuated irregularly between rather narrow limits.⁴⁸ But any stagnation in level of internal migration is more than counterbalanced by greater circulatory movement. This is a period of radically shrunken fertility and hence the sharp braking of population growth. The influx of rural folk into cities continues but at waning absolute or relative rates; interest in rural pioneering has slackened; emigration to foreign lands or to distant internal frontiers is minor or may fail to show up at all in the net figures. What is perhaps most symptomatic, but not yet well documented, is the rise of complex migrational and circulatory movements within the urban network, from

⁴⁸ Henry S. Shryock, Jr.: *Population Mobility within the United States* (Chicago, 1964), pp. 63-119.

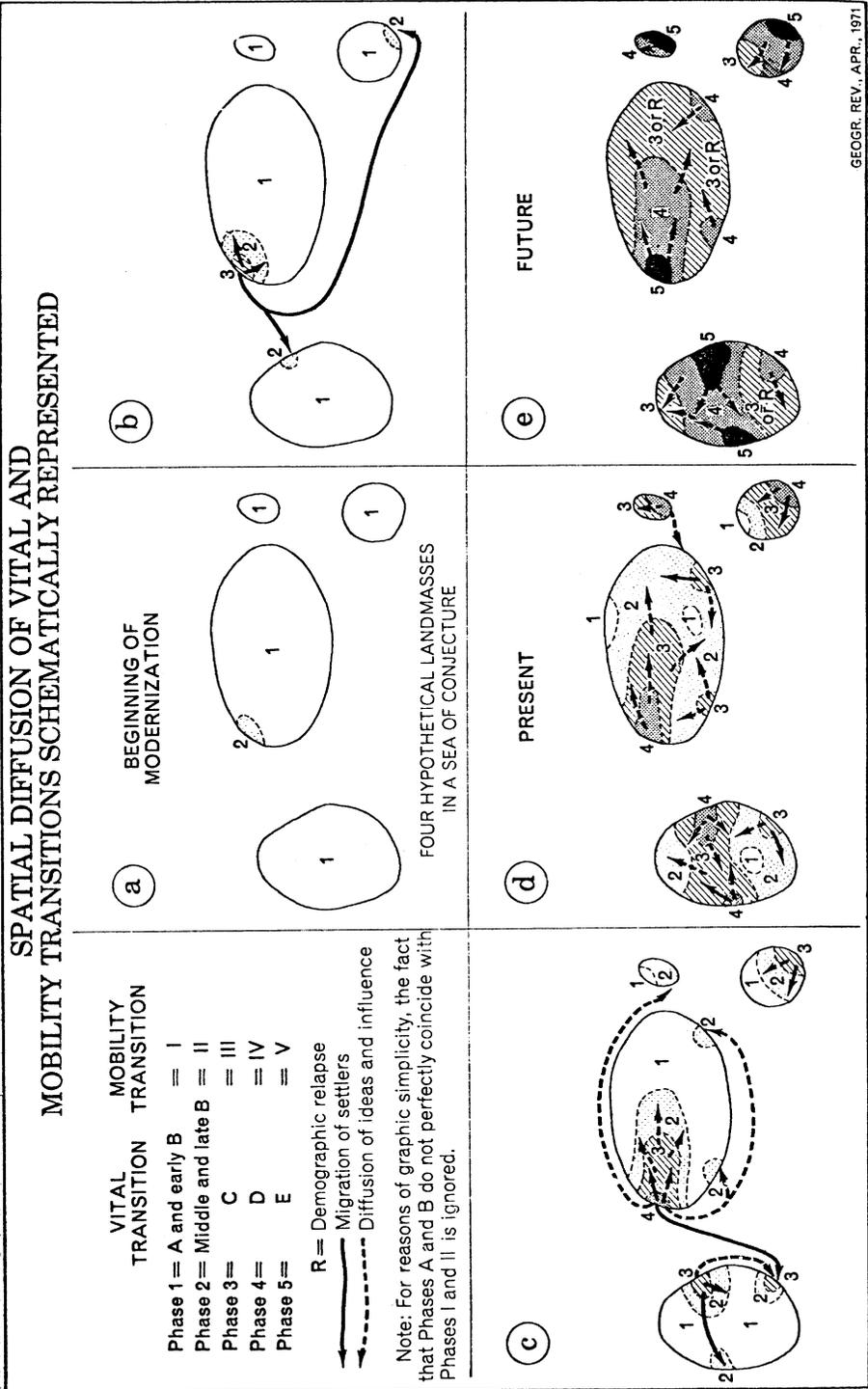


FIG. 4

city to city or within a single metropolitan region. The gross volume of circulation has undoubtedly risen to a new peak, and many new types of circulation, not all purely economic, have begun to materialize.

MIGRATION AND CIRCULATION IN PHASE IV

With the attainment of Phase IV still more complex mobility conditions emerge, very different from those observed in Phases I or II. The flight from the countryside of a truly "landward rural" population has slowed to a trickle for the simple reason that the number of those employed in primary production is approaching the minimum value consistent with optimum economic return. Whatever movement from farm or village persists is almost solely toward the city; for if any colonization frontier lingers on, it is static or has actually begun to retreat.⁴⁹ This is true in the United States, Canada, and Australia, and the agrarian pioneering impulse shows unmistakable signs of faltering in the Soviet Union.

In much of northwestern Europe and in Japan, the earlier net outward movement of emigrants to foreign lands is being overtaken by a significant, if moderate, importation of unskilled workers from less advanced countries. Thus we find steady flows of migrants into Great Britain, the Netherlands, Belgium, France, northern Italy, Switzerland, Sweden, Denmark, West Germany, East Germany, and presumably into northeastern Spain.⁵⁰ The migrants come from Finland, southern Yugoslavia, Bulgaria, southern Spain, Greece, Algeria, Malta, Turkey, Cyprus, and the British and French West Indies.⁵¹ Spatial diffusion of Phases II and III has continued in the supplying areas with a rising rate of rural out-migration, but the repertory of destinations has shifted. At the national scale, the most impressive migrational movements occur within a highly elaborated lattice of major and minor metropolises. The nature and volume of residential transfers appear responsive to flux in economic conditions.⁵²

For the individual migrant, especially the middle- or upper-class male in countries on the top rung of the developmental ladder, one can postulate a

⁴⁹ Gerd Enequist and Gunnar Norling, eds.: *Advance and Retreat of Rural Settlement: Papers of the Siljan Symposium at the XIXth International Geographical Congress*, *Geogr. Ann.*, Vol. 42, No. 4, 1960.

⁵⁰ Georges Tapinos: *Migrations et particularismes régionaux en Espagne*, *Population*, Vol. 21, 1966, pp. 1135-1164; references on pp. 1141, 1143, 1145, and 1148.

⁵¹ Broek and Webb, *op. cit.* [see footnote 4 above], pp. 468-473.

⁵² This is developed in detail in Hope T. Eldridge and Dorothy Swaine Thomas: *Population Redistribution and Economic Growth: United States, 1870-1950: III: Demographic Analyses and Interrelations*, *Memoirs Amer. Philosophical Soc.*, Vol. 61 (Philadelphia, 1964).

lifetime cycle of residential shifts, along with an elaborate schedule of circulatory trips. Starting with one or more migrations to prep school or college, there follow movements incident on military service, marriage, job assignments either from one employer to another or within a single corporate structure, and, finally, to place of retirement. All this is aside from brief circulatory excursions of a few days' or weeks' duration.

On the international scene, there is a comparable circulation of a mobile elite consisting of professionals, celebrities, the wealthy, and the highly skilled that involves not just citizens of advanced nations but highly educated or privileged persons of less developed lands.⁵³ It would be edifying to plot the domiciles, transient or extended, of mining engineers, orchestra conductors, geographers, cinematic directors and actors, missionaries, athletes,⁵⁴ and certain types of business executives.⁵⁵

Although the data are deplorably defective, it seems safe to assume that aggregate circulatory movement for most people living in Phase IV areas has reached unprecedented levels. More persons are making longer trips for a greater variety of reasons more often than ever before, and some of these result in full-fledged migrational transfers. In the United States one imperfect measure of intensity of circulation, the volume of domestic intercity passenger traffic, has doubled within a recent eighteen-year period. Even allowing for population growth, the figures show an increase from 3374 passenger-miles per capita in 1950 to 5157 in 1967. The amount of motor-vehicle passenger travel, including intraurban and rural along with interurban, more than doubled in the same period and increased by 211 percent from 1940 to 1967 (252,257 million vehicle-miles to 783,687 million).⁵⁶

Although the frequency and range of business nonmigrational trips has unquestionably increased, the number of trips inspired by the quest for pleasure or self-improvement has been even more spectacular. The only readily available index to the volume of pleasure travel—and that for merely a small fraction thereof—is the flow of international tourists. This traffic has climbed at a dizzy pace. The total number of international tourists reported to the United Nations Statistical Office in 1948 was 14,076,800, whereas in

⁵³ Walter Adams, edit.: *The Brain Drain* (New York and London, 1968).

⁵⁴ See, for example, John F. Rooney, Jr.: *Up from the Mines and Out from the Prairies: Some Geographical Implications of Football in the United States*, *Geogr. Rev.*, Vol. 59, 1969, pp. 471-492.

⁵⁵ For a highly readable account of the wanderings of the superprivileged, and of what would appear to be the ultimate in restlessness, see Lanfranco Rasponi: *The International Nomads* (New York and Don Mills, Ontario, 1966), especially pp. 15-49.

⁵⁶ *Ibid.*, p. 547.

1968 the figure was 168,943,600.⁵⁷ There is every reason to extrapolate this trend for some years to come. As might be expected, the overwhelming majority of tourists are generated by the more advanced nations. A distinctive feature of Phase IV is the emergence of noneconomic motivations for both migrant and circulator; if Phase V should ever arrive, it seems likely that noneconomic considerations will loom even larger. At any rate, the most advanced and affluent societies have now achieved a state in which the term "sedentary" no longer seems apposite for their members; almost constant change and movement have truly become a way of life. This is a highly complex, intensely interactive social system whose participants are in almost nonstop daily, weekly, or seasonal oscillation across and within spatial and social zones, indulge in a vast range of irregular temporary excursions, and frequently migrate, in the sense of formal change of residence.⁵⁸

WHERE DOES IT ALL END?

The terminal stage of the vital revolution is predictable as one in which mortality rates approach the biologically feasible minimum and a carefully managed fertility hovers near the same level, thus yielding a nearly constant population. The vital indices of Phase E in a superadvanced society would not differ much from those already recorded in such countries as Japan, Hungary, and Sweden, unless major medical discoveries help arrest the aging process or stabilize or cure the various organic ailments to which a majority of the advanced populations are now succumbing. But even such a near-zero death rate could be countered with draconian measures to deflate fertility still further. (We must disregard the ever-present threat of worldwide military disaster or of new epidemics caused by mutant microorganisms or viruses.) The only real problem would be the social and psychological means whereby fertility is controlled.

The terminal Phase V suggested for future superadvanced societies places a greater strain on the imagination. Simple straight-line extrapolations will not do. Although there is an absolute minimum for both fertility and mortality, it is more difficult to fix an effective upper limit to human mobility, even if the phenomenon is obviously finite. Is there a point beyond which mobility becomes counterproductive economically and socially or even

⁵⁷ *United Nations Statistical Yearbook 1969* (New York, 1970), pp. 437-438. For 1948 to 1966 trends see Anthony V. Williams and Wilbur Zelinsky: On Some Patterns in International Tourist Flows, *Econ. Geography*, Vol. 46, 1970, pp. 549-567; reference on p. 550.

⁵⁸ The current United States rate is 20 percent of the total population per annum.

psychologically and physiologically? The psychological question has already been raised concerning present transoceanic jet travel and the prospective SST. When and how will mobility saturation be reached? In any event, further general socioeconomic advance may well bring in its wake socially imposed mechanisms for controlling location and movement of populations. What might be technically and politically feasible is unclear, but planning for a restructured urban system and for circulation and migration therein may become urgent in the near future. The traffic-control systems on our streets may be a primitive precursor of much more elaborate devices.

To return to the model, earlier trends may be duplicated in the emergence of Phase V regions; that is to say, a mobility regime in which the vigorous interchange of migrants among urban places continues with another escalation of rates and unpredictable new varieties of circulation would appear in those innovational hearths where Phases III and IV first became observable. The earliest occurrence may be in northwestern Europe, but it is even likelier in places with more frenetic socioeconomic evolution, as in urbanized Japan or the most advanced segments of Anglo-America. In fact, the nearest approach to Phase V at this moment would seem to be in Southern California.

Does the proposed mobility transition imply an eventual homogenization of the entire inhabited world as a single Phase IV (or V) region? The answer, of course, hinges largely on the fate of the Phase II countries poised at the crossroads from which they must move uphill toward higher status or downward into that slough of despond, the demographic relapse. Apart from the interesting problem of whether it is technically and ecologically possible, or philosophically desirable, for the entire human species to exist at a truly lofty socioeconomic level, such an outcome would imply revision of at least one attribute of Phase IV. With the evaporation of significant pools of unskilled labor, there would cease to be any movement of low-wage migrant labor to affluent areas unable to handle menial chores with local recruits. But by that time one can also visualize a degree of technological and social progress obviating the need for human drudges.

Because of its intrinsic nature, the mobility transition, like the vital transition, does not faithfully simulate earlier examples each time it is triggered off. Failure to appreciate its cybernetic properties or to consider the importance of temporal or spatial scale has provoked much unjustified criticism of the vital transition. Both transitions are episodes in the history of a single large demographic system interlinked with other social systems, and both bristle with feedback effects. Indeed, a truly penetrating analysis of the

operation of either transition must ultimately resort to the general-systems approach. Not only does the pattern of events during one period in the transition make its impact felt on later phases in the same community, but earlier or simultaneous events elsewhere can exert a profound effect. It matters greatly that Singapore may have entered its Phase III in the 1960's and that Tunisia may be doing so in the 1970's, while urban England passed the same point sometime between 1820 and 1830. Some sort of learning process is at work within the system, resulting in a significant change in the nature of each phase of latter-day transitions and also in a general acceleration or telescoping of phases. As the absolute date becomes more recent, there is a much more rapid enactment of higher phases through space and time. It may have taken Great Britain or Sweden nearly two centuries to play out their vital and mobility transitions, but Japan seems to have carried them off in less than eighty years, and the Russians, bestirring themselves about the same time, are rounding the course with almost the same record. Hong Kong, Puerto Rico, American Samoa, Kuwait, Libya, Kazakhstan, and Venezuela may gallop from start to finish in much less time—if they succeed at all.

In summary, then, we have added to the vital transition a second sequential spatiotemporal process, the mobility transition, that is essential to the understanding of the modernization phenomenon. Both transitions identified thus far are irreversible; barring a truly major catastrophe, neither the world as a whole nor any single region can ever revert to anything resembling its pristine, premodern condition. Furthermore, they are highly time specific. They have occurred only within a fraction (less than a thousand years) of the scores of millennia *Homo sapiens* has already endured, and the precise date at which the transition is initiated in a particular region is profoundly significant. Both transitions seem to have a fatalistic inevitability; all human communities have been launched upon them, and if they can surmount the developmental crisis that occurs in midstream, all appear destined to rush forward to whatever terminal conditions may be implied by extremely advanced demographic development.