

"Human Ecology"

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Robert Ezra Park

Editors' Introduction

Robert Park was born in Harveyville, Pennsylvania while his father was serving in the Civil War. They later settled in Minnesota and his father became a prosperous grocer. Park entered the University of Michigan in 1882 and was particularly drawn to the philosophy courses of John Dewey. He acquired ideas of evolutionary naturalism from Dewey, coming to see society as set in the natural order, in a competitive arena, but also held together by cognitive and moral consensus.

Upon graduation he began a career as a newspaper reporter, moving from Minneapolis, to Detroit, to Denver, to New York, and finally to Chicago. He wrote on the corruption of urban political machines, the immigrant areas of the city, crime, and other urban affairs. Journalism, particularly in Manhattan, satisfied his thirst for adventure and multifarious experience, but a persisting interest in the grand questions of life led him to return to academia to study philosophy at Harvard University in 1898. He subsequently grew interested in social thought and thus was impelled to move to Germany and the University of Berlin, which was then seen by many to be the intellectual center of Europe. While in Berlin, he came under the influence of Georg Simmel, then a *Privatdozent* lecturing in sociology. He obtained a Ph.D. from the University of Heidelberg in 1904.

Park returned from Germany to Massachusetts in 1903 and became a teaching assistant at Harvard. Through a chance encounter with a missionary, however, he discovered the work of the Congo Reform Association, and soon accepted work as their secretary and chief publicity agent. Through his work lobbying Congress to take action on the state of brutality and exploitation in the Congo Free State, Park met Booker T. Washington, who in 1905 was at the height of his notoriety as an accommodationist spokesman for black causes among the political elites. He became Washington's stenographer/ghostwriter, counselor and press agent for the next seven years, working mainly at the Tuskegee Institute in Macon, Georgia, with regular visits to New England and occasional tours to Europe with Washington. This migratory lifestyle did not suit his family, however, and he decided to return to academic life, at the invitation of W. I. Thomas, then a professor of sociology at the University of Chicago.

In the fall of 1913, at the age of 49, Robert Park began the quarter-century of teaching and research leadership during which the University of Chicago sociology department became a celebrated center of the discipline in America. Through the tremendous surge of field research that he supervised, he was instrumental in drawing sociology away from a normative and reform-oriented focus of the Progressive era to a more scientific analysis that still accounted for the social importance of knowledge. His seminal essay titled, "The City: Suggestions for the Investigation of Human Behavior in the City," published in 1915 in the *American Journal of Sociology*, became a kind of manifesto for the use of city as a research laboratory. In it, he called for the study of urban life using the same ethnographic methods used by anthropologists to study the Native Americans. With Ernest W. Burgess, Park wrote and edited a textbook, *Introduction to the Science of Sociology* (1921), which became the most influential reader in the early history of American sociology. Park served as President of the American Sociological Society (later changed to Association) in 1925.

ROBERT EZRA PARK

R. D. McKenzie provided the first exposition on human ecology in an essay titled "The Ecological Approach to the Study of the Human Community," published in the *American Journal of Sociology* in 1924. Robert Park codified his beliefs in the same journal in 1936, in a paper titled, "Human Ecology." In this essay, Park applied the principles of Charles Darwin's "web of life" and "struggle for existence" in plant and animal communities to the study of human communities. Through his explanation of concepts such as dominance, invasion, succession, and natural areas, Park provided a justification for urban inequality and free market competition that is often associated with the beliefs of Social Darwinists, from whom he drew some of his thinking. Social Darwinism was a body of late nineteenth-century philosophy and social thought expounded by the American William Sumner that applied Charles Darwin's principles of "natural selection" to human evolution. While Darwin held a passive sense of the interplay between nature and evolution, Sumner took it a step further, akin to Jean-Baptiste Lamarck, who had a more

Social Darwinism was a body of thought that played a role in the development of British Herbert Spencer and American William Graham Sumner. While Darwin's theory of "natural selection" to the analysis of human social evolution. Spencer coined the concept "survival of the fittest" to variation and heredity, the Social Darwinists were more akin to Jean-Baptiste Lamarck, who had a more active conception of the inheritance of acquired characteristics. Spencer rewarded for their greater intelligence, talents, ambition, and industriousness, while the rich and powerful are rewarded for their lack of these characteristics. Fre market liberalism was promoted in the economy, while charitable and state redistributive programs were opposed. Social Darwinism was eventually used to justify colonialism, racial eugenics, and policies of cultural assimilation.

Park was inspired by Charles Darwin, but ultimately diverges from Social Darwinism through his recognition that human societies participate in a social and moral order that has no counterpart on the nonhuman level. There is a dualism in human ecology in that there is competition as well as cooperation and symbiosis, especially at higher levels of the interactional pyramid. Park furthermore accounted for process, or social change, and was concerned that ecological equilibrium could commonly be disrupted by external changes. Park was driven by the philosophy of pragmatism that he learned from John Dewey, who exhorted students to engage in active learning through direct service in communities.

Robert Park was driven by the philosophy of pragmatism that was especially attractive to Americans in the early twentieth century, and was concerned that ecological determinism would lead to fatalism. American educators to school their students to engage in active learning through direct service in communities. He was influenced by the turn-of-the-century social reform and Progressive movements, as evidenced by his early passion for journalistic muckraking and devotion to anti-colonialist and black causes, distinguishing him from the conservative and racist Social Darwinists. Though liberal-minded, he did not buck the status quo as attested by his association with the accommodationism of Booker T. Washington. Park died in 1944 in Nashville.

For further writing on the legacy of Robert Park, see: Fred H. Matthews, *Quest for an American Sociology* (Montreal: McGill-Queen's University Press, 1977) and Edward Shils, *Robert E. Park and the Chicago School* (Winter, 1991): 120–127. See also the section on “Robert E. Park, 1864–1944,” *The American Scholar* (Winter, 1991): 120–127. See also the section on Robert Park in Lewis A. Coser's *Masters of Sociological Thought: Ideas in Historical and Social Context* (2nd Edition) (Fort Worth, Texas: Harcourt Brace Jovanovich, 1977).

THE WEB OF LIFE

Naturalists of the last century were greatly intrigued by their observation of the interrelations and co-ordinations, within the realm of animate nature, of the numerous, divergent, and widely scattered species. Their successors, the botanists, and zoologists of the present day, have turned their attention to more specific inquiries, and the "realm of nature," like the concept of evolution, has come to be for them a notion remote and speculative.

The "web of life," in which all living organisms plants and animals alike, are bound together in a vast system of interlinked and interdependent lives, is nevertheless, as J. Arthur Thompson puts it, "one of the fundamental biological concepts" and is "as characteristically Darwinian as the struggle for existence."

Darwin's famous instance of the cats and the clover is the classic illustration of this interdependence. He found, he explains, that bumblebees were almost indispensable to the fertilization of the heartsease, since other bees do not visit this

flower. The same thing is true with some kinds of clover. Bumblebees alone visit red clover, as other bees cannot reach the nectar. The inference is that if the bumblebees became extinct or very rare in England, the heartsease and red clover would become very rare, or wholly disappear. However, the number of bumblebees in any district depends in a great measure on the number of field mice, which destroy their combs and nests. It is estimated that more than two-thirds of them are thus destroyed all over England. Near villages and small towns the nests of bumblebees are more numerous than elsewhere and this is attributed to the number of cats that destroy the mice. Thus next year's crop of purple clover in certain parts of England depends on the number of bumblebees in the district; the number of bumblebees depends upon the number of field mice, the number of field mice upon the number and the enterprise of the cats, and the number of cats – as someone has added – depends on the number of old maids and others in neighboring villages who keep cats.

These large food chains, as they are called, each link of which eats the other, have as their logical prototype the familiar nursery rhyme, "The House that Jack Built." You recall:

*The cow with the crumpled horn,
That tossed the dog,
That worried the cat,
That killed the rat,
That ate the malt
That lay in the house that Jack built.*

Darwin and the naturalists of his day were particularly interested in observing and recording these curious illustrations of the mutual adaptation and correlation of plants and animals because they seemed to throw light on the origin of the species. Both the species and their mutual interdependence, within a common habitat, seem to be a product of the same Darwinian struggle for existence.

It is interesting to note that it was the application to organic life of a sociological principle – the principle, namely, of “competitive co-operation” – that gave Darwin the first clue to the formulation of his theory of evolution.

[...]

The active principle in the ordering and regulating of life within the realm of animate nature is, as Darwin described it, "the struggle for existence." By this means the numbers of living organisms are regulated, their distribution controlled, and the balance of nature maintained. Finally, it is by means of this elementary form of competition that the existing species, the survivors in the struggle, find their niches in the physical environment and in the existing correlation or division of labor between the different species.

[...]

These manifestations of a living, changing, but persistent order among competing organisms – organisms embodying “conflicting yet correlated interests” – seem to be the basis for the conception of a social order transcending the individual species, and of a society based on a biotic rather than a cultural basis, a conception later developed by the plant and animal ecologists.

In recent years the plant geographers have been the first to revive something of the earlier field naturalists' interest in the interrelations of species. Haeckel, in 1878, was the first to give to these studies a name, "ecology," and by so doing gave them the character of a distinct and separate science.

The interrelation and interdependence of the species are naturally more obvious and more intimate within the common habitat than elsewhere. Furthermore, as correlations have multiplied and competition has decreased, in consequence of mutual adaptations of the competing species, the habitat and habitants have tended to assume the character of a more or less completely closed system.

Within the limits of this system the individual units of the population are involved in a process of competitive co-operation, which has given to their interrelations the character of a natural economy. To such a habitat and its inhabitants – whether plant, animal, or human – the ecologists have applied the term “community.”

The essential characteristics of a community, so conceived, are those of: (1) a population, territorially organized, (2) more or less completely rooted in the soil it occupies, (3) its individual units living in a relationship of mutual interdependence that is symbiotic rather than societal, in the sense in which that term applies to human beings.

These symbiotic societies are not merely unorganized assemblages of plants and animals

which happen to live together in the same habitat. On the contrary, they are interrelated in the most complex manner. Every community has something of the character of an organic unit. It has a more or less definite structure and it has a life history in which juvenile, adult and senile phases can be observed. If it is an organism, it is one of the organs which are other organisms. It is, to use Spencer's phrase, a superorganism.

What more than anything else gives the symbiotic community the character of an organism is the fact that it possesses a mechanism (competition) for (1) regulating the numbers, and (2) preserving the balance between the competing species of which it is composed. It is by maintaining this biotic balance that the community preserves its identity and integrity as an individual unit through the changes and the vicissitudes to which it is subject in the course of its progress from the earlier to the later phases of its existence.

THE BALANCE OF NATURE

The balance of nature, as plant and animal ecologists have conceived it, seems to be largely a question of numbers. When the pressure of population upon the natural resources of the habitat reaches a certain degree of intensity, something invariably happens. In the one case the population may swarm and relieve the pressure of population by migration. In another, where the disequilibrium between population and natural resources is the result of some change, sudden or gradual, in the conditions of life, the pre-existing correlation of the species may be totally destroyed.

Change may be brought about by a famine, an epidemic, or an invasion of the habitat by some alien species. Such an invasion may result in a rapid increase of the invading population and a sudden decline in the numbers if not the destruction of the original population. Change of some sort is continuous, although the rate and pace of change sometimes vary greatly.

[...]

Under ordinary circumstances, such minor fluctuations in the biotic balance as occur are mediated and absorbed without profoundly disturbing the existing equilibrium and routine of life. When, on the other hand, some sudden and

catastrophic change occurs – it may be a famine, or pestilence – it upsets the biotic balance, breaks "the cake of custom," and releases energy up to that time held in check. A series of rapid even violent changes may ensue which profoundly alter the existing organization of communal life and give a new direction to the future course of events.

The advent of the boll weevil in the southern cotton fields is a minor instance but illustrates the principle. The boll weevil crossed the Rio Grande at Brownsville in the summer of 1892. By 1894 the pest had spread to a dozen counties in Texas, bringing destruction to the cotton and great losses to the planters. From that point it advanced, every recurring season, until by 1928 it had covered practically all the cotton producing area in the United States. Its progress took the form of a territorial succession. The consequences to agriculture were catastrophic but not wholly for the worse, since they served to give an impulse to changes in the organization of the industry long overdue. It also hastened the northward migration of the Negro tenant farmer.

The case of the boll weevil is typical. In this mobile modern world, where space and time have been measurably abolished, not men only but all the minor organisms (including the microbes) seem to be, as never before, in motion. Commerce, in progressively destroying the isolation upon which the ancient order of nature rested, has intensified the struggle for existence over an ever widening area of the habitable world. Out of this struggle a new equilibrium and a new system of animate nature, the new biotic basis of the new world society, is emerging.

[...]

The conditions which affect and control the movements and numbers of populations are more complex in human societies than in plant and animal communities, but they exhibit extraordinary similarities.

The boll weevil, moving out of its ancient habitat in the central Mexican plateau and into the virgin territory of the southern cotton plantations, incidentally multiplying its population to the limit of the territories and resources, is not unlike the Boers of Cape Colony, South Africa, trekking out into the high veldt of the central South African plateau and filling it, within a period of one hundred years, with a population of their own descendants.

Competition operates in the human (as it does in the plant and animal) community to bring about and restore the communal equilibrium, when, either by the advent of some intrusive factor from without or in the normal course of its life-history, that equilibrium is disturbed.

Thus every crisis that initiates a period of rapid change, during which competition is intensified, moves over finally into a period of more or less stable equilibrium and a new division of labor. In this manner competition brings about a condition in which competition is superseded by co-operation.

It is when, and to the extent that, competition declines that the kind of order which we call society may be said to exist. In short, society, from the ecological point of view, and in so far as it is a territorial unit, is just the area within which biotic competition has declined and the struggle for existence has assumed higher and more sublimated forms.

COMPETITION, DOMINANCE AND SUCCESSION

There are other and less obvious ways in which competition exercises control over the relations of individuals and species within the communal habitat. The two ecological principles, dominance and succession, which operate to establish and maintain such communal order as here described are functions of, and dependent upon, competition.

In every life-community there is always one or more dominant species. In a plant community this dominance is ordinarily the result of struggle among the different species for light. In a climate which supports a forest the dominant species will invariably be trees. On the prairie and steppes they will be grasses.

[...]

But the principle of dominance operates in the human as well as in the plant and animal communities. The so-called natural or functional areas of a metropolitan community – for example, the slum, the rooming-house area, the central shopping section and the banking center – each and all owe their existence directly to the factor of dominance, and indirectly to competition.

The struggle of industries and commercial institutions for a strategic location determines in the long run the main outlines of the urban community. The

distribution of population, as well as the location and limits of the residential areas which they occupy, are determined by another similar but subordinate system of forces.

The area of dominance in any community is usually the area of highest land values. Ordinarily there are in every large city two such positions of highest land value – one in the central shopping district, the other in the central banking area. From these points land values decline at first precipitantly and then more gradually toward the periphery of the urban community. It is these land values that determine the location of social institutions and business enterprises. Both the one and the other are bound up in a kind of territorial complex within which they are at once competing and interdependent units.

As the metropolitan community expands into the suburbs the pressure of professions, business enterprises, and social institutions of various sorts destined to serve the whole metropolitan region steadily increases the demand for space at the center. Thus not merely the growth of the suburban area, but any change in the method of transportation which makes the central business area of the city more accessible, tends to increase the pressure at the center. From thence this pressure is transmitted and diffused, as the profile of land values discloses, to every other part of the city.

Thus the principle of dominance, operating within the limits imposed by the terrain and other natural features of the location, tends to determine the general ecological pattern of the city and the functional relation of each of the different areas of the city to all others.

Dominance is, furthermore, in so far as it tends to stabilize either the biotic or the cultural community, indirectly responsible for the phenomenon of succession.

The term "succession" is used by ecologists to describe and designate that orderly sequence of changes through which a biotic community passes in the course of its development from a primary and relatively unstable to a relatively permanent or climax stage. The main point is that not merely do the individual plants and animals within the communal habitat grow but the community itself, i.e., the system of relations between the species, is likewise involved in an orderly process of change and development.

The fact that, in the course of this development, the community moves through a series of more or less clearly defined stages is the fact that gives this development the serial character which the term "succession" suggests.

The explanation of the serial character of the changes involved in succession is the fact that at every stage in the process a more or less stable equilibrium is achieved, and as a result of progressive changes in life-conditions, possibly due to growth and decay, the equilibrium achieved in the earlier stages is eventually undermined. In this case the energies previously held in balance will be released, competition will be intensified, and change will continue at a relatively rapid rate until a new equilibrium is achieved.

The climax phase of community development corresponds with the adult phase of an individual's life.

[...]

The cultural community develops in comparable ways to that of the biotic, but the process is more complicated. Inventions, as well as sudden or catastrophic changes, seem to play a more important part in bringing about serial changes in the cultural than in the biotic community. But the principle involved seems to be substantially the same. In any case, all or most of the fundamental processes seem to be functionally related and dependent upon competition.

Competition, which on the biotic level functions to control and regulate the interrelations of organisms, tends to assume on the social level the form of conflict. The intimate relation between competition and conflict is indicated by the fact that wars frequently, if not always, have, or seem to have, their source and origin in economic competition which, in that case, assumes the more sublimated form of a struggle for power and prestige. The social function of war, on the other hand, seems to be to extend the area over which it is possible to maintain peace.

BIOLOGICAL ECONOMICS

If population pressure, on the one hand, co-operates with changes in local and environmental conditions to disturb at once the biotic balance and social equilibrium, it tends at the same time to

intensify competition. In so doing it functions indirectly, to bring about a new, more minute division of labor.

Under the influence of an intensified competition, and the increased activity which competition involves, every individual and every species, for itself, tends to discover the particular niche in the physical and living environment where it can survive and flourish with the greatest possible expansiveness consistent with its necessary dependence upon its neighbors.

It is in this way that a territorial organization and a biological division of labor, within the communal habitat, is established and maintained. This explains, in part at least, the fact that the biotic community has been conceived at one time as a kind of superorganism and at another as a kind of economic organization for the exploitation of the natural resources of its habitat.

In their interesting survey, *The Science of Life*, H. G. Wells and his collaborators, Julian Huxley and G. P. Wells, have described ecology as "biological economics," and as such very largely concerned with "the balances and mutual pressures of species living in the same habitat."

"Ecology," as they put it, is "an extension of Economics to the whole of life." On the other hand the science of economics as traditionally conceived, though it is a whole century older, is merely a branch of a more general science of ecology which includes man with all other living creatures. Under the circumstances what has been traditionally described as economics and conceived as restricted to human affairs, might very properly be described as Barrows some years ago described geography, namely as human ecology. It is in this sense that Wells and his collaborators would use the term.

Since human ecology cannot be at the same time both geography and economics, one may adopt, as a working hypothesis, the notion that it is neither one nor the other but something independent of both. Even so the motives for identifying ecology with geography on the one hand, and economics on the other, are fairly obvious.

From the point of view of geography, the plant, animal, and human population, including their habitations and other evidence of man's occupation of the soil, are merely part of the landscape,

of which the geographer is seeking a detailed description and picture.

On the other hand ecology (biologic economics), even when it involves some sort of unconscious co-operation and a natural, spontaneous, and non-rational division of labor, is something different from the economics of commerce; something quite apart from the bargaining of the market place. Commerce, as Simmel somewhere remarks, is one of the latest and most complicated of all the social relationships into which human beings have entered. Man is the only animal that trades and traffics.

Ecology, and human ecology, if it is not identical with economics on the distinctively human and cultural level is, nevertheless, something more than and different from the static order which the human geographer discovers when he surveys the cultural landscape.

The community of the geographer is not, for one thing, like that of the ecologist, a closed system, and the web of communication which man has spread over the earth is something different from the "web of life" which binds living creatures all over the world in a vital nexus.

SYMBIOSIS AND SOCIETY

Human ecology, if it is neither economics on one hand nor geography on the other, but just ecology, differs, nevertheless, in important respects from plant and animal ecology. The interrelations of human beings and interactions of man and his habitat are comparable but not identical with interrelations of other forms of life that live together and carry on a kind of "biological economy" within the limits of a common habitat.

For one thing man is not so immediately dependent upon his physical environment as other animals. As a result of the existing world-wide division of labor, man's relation to his physical environment has been mediated through the intervention of other men. The exchange of goods and services have co-operated to emancipate him from dependence upon his local habitat.

Furthermore man has, by means of inventions and technical devices of the most diverse sorts, enormously increased his capacity for reacting upon and remaking, not only his habitat but his

world. Finally, man has erected upon the basis of the biotic community an institutional structure rooted in custom and tradition.

Structure, where it exists, tends to resist change, at least change coming from without; while it possibly facilitates the cumulation of change within. In plant and animal communities structure is biologically determined, and so far as any division of labor exists at all it has a physiological and instinctive basis. The social insects afford a conspicuous example of this fact, and one interest in studying their habits is that they show the extent to which social organization can be developed on a purely physiological and instinctive basis, as is the case among human beings in the natural as distinguished from the institutional family.

In a society of human beings, however, this communal structure is reinforced by custom and assumes an institutional character. In human as contrasted with animal societies, competition and the freedom of the individual is limited on every level above the biotic by custom and consensus.

The incidence of this more or less arbitrary control which custom and consensus imposes upon the natural social order complicates the social process but does not fundamentally alter it — or, if it does, the effects of biotic competition will still be manifest in the succeeding social order and the subsequent course of events.

The fact seems to be, then, that human society, as distinguished from plant and animal society, is organized on two levels, the biotic and the cultural. There is a symbiotic society based on competition and a cultural society based on communication and consensus. As a matter of fact the two societies are merely different aspects of one society, which, in the vicissitudes and changes to which they are subject remain, nevertheless, in some sort of mutual dependence each upon the other. The cultural superstructure rests on the basis of the symbiotic substructure, and the emergent energies that manifest themselves on the biotic level in movements and actions reveal themselves on the higher social level in more subtle and sublimated forms.

However, the interrelations of human beings are more diverse and complicated than this dichotomy, symbiotic and cultural, indicates. This fact is attested by the divergent systems of human

interrelations which have been the subject of the special social sciences. Thus human society, certainly in its mature and more rational expression, exhibits not merely an ecological, but an economic, a political, and a moral order. The social sciences include not merely human geography and ecology, but economics, political science, and cultural anthropology.

It is interesting also that these divergent social orders seem to arrange themselves in a kind of hierarchy. In fact they may be said to form a pyramid of which the ecological order constitutes the base and the moral order the apex. Upon each succeeding one of these levels, the ecological, economic, political, and moral, the individual finds himself more completely incorporated into and subordinated to the social order of which he is a part than upon the preceding.

Society is everywhere a control organization. Its function is to organize, integrate, and direct the energies resident in the individuals of which it is composed. One might, perhaps, say that the function of society was everywhere to restrict competition and by so doing bring about a more effective co-operation of the organic units of which society is composed.

Competition, on the biotic level, as we observe it in the plant and animal communities, seems to be relatively unrestricted. Society, so far as it exists, is anarchic and free. On the cultural level, this freedom of the individual to compete is restricted by conventions, understandings, and law. The individual is more free upon the economic level than upon the political, more free on the political than the moral.

As society matures control is extended and intensified and free commerce of individuals restricted, if not by law then by what Gilbert Murray refers to as "the normal expectation of mankind." The mores are merely what men, in a situation that is defined, have come to expect.

Human ecology, in so far as it is concerned with a social order that is based on competition rather than consensus, is identical, in principle at least, with plant and animal ecology. The problems with

which plant and animal ecology have been traditionally concerned are fundamentally population problems. Society, as ecologists have conceived it, is a population settled and limited to its habitat. The ties that unite its individual units are those of a free and natural economy, based on a natural division of labor. Such a society is territorially organized and the ties which hold it together are physical and vital rather than customary and moral.

Human ecology has, however, to reckon with the fact that in human society competition is limited by custom and culture. The cultural superstructure imposes itself as an instrument of direction and control upon the biotic substructure.

Reduced to its elements the human community, so conceived, may be said to consist of a population and a culture, including in the term culture (1) a body of customs and beliefs and (2) a corresponding body of artifacts and technological devices.

To these three elements or factors - (1) population, (2) artifact (technological culture), (3) custom and beliefs (non-material culture) - into which the social complex resolves itself, one should, perhaps, add a fourth, namely, the natural resources of the habitat.

It is the interaction of these four factors - (1) population, (2) artifacts (technological culture), (3) custom and beliefs (non-material culture), and (4) the natural resources that maintain at once the biotic balance and the social equilibrium, when and where they exist.

The changes in which ecology is interested are the movements of population and of artifacts (commodities) and changes in location and occupation - any sort of change, in fact, which affects an existing division of labor or the relation of the population to the soil.

Human ecology is, fundamentally, an attempt to investigate the processes by which the biotic balance and the social equilibrium (1) are maintained once they are achieved and (2) the processes by which, when the biotic balance and the social equilibrium are disturbed, the transition is made from one relatively stable order to another.