

Sociology's Neglect of Ecological Context

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1. Introduction

Probably for as long as there have been literate humans on this planet, living together in groups, drawing survival strength from such group life, some have wondered whether there were explanations for the patterns and regularities in their lives in company with one another. Their speculative answers about such matters would have constituted a kind of folk sociology, although nobody at the time called these ideas by such a phrase.

When Auguste Comte decided to coin the word “sociology” (Ca. 1839) to refer to a new science he was seeking to launch, he knew of recent societal change and was concerned to foresee the further evolution of societies and cultures. Humanity’s recent intellectual history, Comte believed, had involved a constructing of one science atop another, resulting in a hierarchy with mathematics at the foundation, then astronomy, followed by physics, then chemistry, topped by biology (with psychology included therein), and to be crowned by sociology. He discerned three stages of advancement to the attainment of each layer, from people explaining the world in theological terms, through a metaphysical style of thought, and finally to positivism—understanding a given level of phenomena through scientific reasoning from observations. He believed this “law of three stages” was true for all societies, and he hopefully regarded Europe (France in particular) as on the verge of the third stage as he wrote.

Comte’s views on societal evolution preceded by two decades the existence of an adequate theory of the evolution even of plant and animal communities. The products of such societal evolution observable in his time had yet to be complicated by some major developments that have happened since. The industrial revolution had only begun to get under way. There were only about one-fifth as many human beings on this planet as there are alive today, and none were then equipped to amplify their lives and abilities with such an array of powerful technological apparatus as has since become prevalent in many nations. The implications of that fact have not been as obvious as one might suppose. Today there are many more of us, and we have acquired by technological change gigantic powers to reshape our planetary environment, extracting resources from it to feed our proliferating machines, and injecting into it the products and by-products of all our activities.

Herbert Spencer in Britain, conceiving a human society as a kind of organism, wrote a multivolume *The Principles of Sociology* (1876-1896) as a component of his series of works on a *Synthetic Philosophy*, including volumes on *First Principles*, *Principles of Biology*, and *The Principles of Psychology*. It is doubtful that many sociologists read Spencer’s other books

(those without the word sociology in their titles). It might have been found instructive, however, if sociologists had looked into his *Principles of Biology*, as we shall see in a moment.

An earlier book by Spencer, *The Study of Sociology* (1873) was used as a textbook in one of the first courses in sociology offered in America, by William Graham Sumner (who served as the second president of the American Sociological Society). Among Sumner's many sociological writings was an essay decrying the early steps toward American imperialism by the acquisition of overseas territories (Sumner 1896). Insightful as that essay was, it fell short of seeing a human society's ecosystem dependence. So from today's perspective it appears to have been a missed opportunity for now badly needed enlightenment.

Spencer's was a long and productive writing career, facilitated by an inheritance which made paid employment unnecessary. It involved revised editions of several things he wrote. A young scholar, Arthur Tansley, who assisted him in the revision of *Principles of Biology* went on to become in 1913 the founding president of the British Ecological Society, and one wonders how much he may have influenced Spencer in a direction that might have, had there been enough time remaining in Spencer's career, caused salient ecological concepts and principles to percolate into his sociology, and thence into the discipline's further development. Perhaps this was another (narrowly) missed opportunity to provide needed foresight about today's global human condition.

As sociology developed, from Comte's time and Spencer's until recently, there were other grand system-builders, but there was an over all trend toward studying smaller aspects of societal living (Catton 1964). As sociology achieved academic status as an established discipline, it had come to include demographic studies, analyses of social organizations (large and small), interpersonal relations in families and other small groups, social effects of mass communication, industrial relations, race relations, social change processes, and various "sociologies of" (religion, education, politics, economic development, science, etc.).

For a while it was fashionable to think about various "schools of thought" among sociologists, but indications of agreement among different writers who attempted to list the schools were quite rare. Comprehensive system-building occasionally recurs, but it no longer dominates the field. In time the word "sociology" came to denote the body of knowledge acquired by using more or less scientific procedures to study human interactions at all levels from whole societies down to small groups (such as families) and even dyads, temporary or lasting.

Toward the end of the 19th century, another Frenchman, Emile Durkheim, sought to establish sociology's qualification as a real science by actually doing scientific research on specific sociological topics, exemplifying such a program by his studies of *The Division of Labor in Society* (1893), *Suicide* (1897), and *Elementary Forms of the Religious Life* (1912). He also established a journal, the *Année Sociologique*. Today there are numerous sociology periodicals, published in numerous countries. Most of the articles they publish are studies of social phenomena farther down the scale from the grand philosophizing of a Comte or other pioneers. And, naturally there are many sociology courses offered in colleges and universities around the world, but especially it has become established in the tertiary curricula in the United States.

2. Anthropocentrism

The attention of people calling themselves sociologists has been almost entirely focussed on one species—*Homo sapiens*. Nature is replete with instances of interspecific interactions, and the lives of many organisms depend heavily upon their involvement in *ecosystems*. Only recently, however, has much attention begun to be paid by academic sociologists to social organization *among other species*, or to possibly instructive parallels between societal and communal relations among creatures of various non-human species (e.g., “social insects;” monkeys and apes) and human social life.

Individuals of species *Homo sapiens* influence one another's actions as members of whole societies and as members of subgroups within them. Collective actions become structured. Sociology has provided ways of conceptualizing recurrent behavior patterns, roles, norms and sanctioning processes. More than a century of sociological research has yielded principles that enable some prediction of outcomes in the course of societal events and organizational activities. Only recently, however, has serious attention been paid by a few sociologists to the possibility that human lives are importantly subject to ecosystem constraints. “Human ecology” became a specialty within sociology largely by analogical reasoning when sociologists at the University of Chicago, studying urban growth patterns, saw parallels between their work and that of some pioneering biologists at that university studying plant and animal associations in the region (Faris 1967). At the time it seemed not to occur to anyone that perhaps it was (human) sociology that should be seen as a specialty within a larger science of ecology. Here again we have an instance of a missed opportunity to have acquired an ability to foresee today's ominous human predicament (Catton, 1980).

Although all humans living today, of all races, sizes, genders and persuasions, are members of the single species, *Homo sapiens*, sociologists do study, among other things, processes of *social differentiation*, by which various human individuals acquire in their experiences of interacting with others different skills, tastes, habits, desires, expectations, etc. Becoming differentiated by social processes, humans can function in relation to one another almost as separate *quasi-species*. Thus, when a field of knowledge developed within biology concerned with interdependence of various species collectively adapting to the environment surrounding them, its concepts and principles did attract attention among neighboring sociologists (Park et al. 1925; Park 1952; Hawley 1950). Parallels would be noted between division of labor among humans and the division of functions between assorted species populations associated in an ecosystem.

These developments were highlights of sociology's first century of existence as an academic discipline. It flourished especially at a university located in a young and growing American metropolis located at a transportation crossroads, linking urban and rural lives—Chicago. The USA saw itself at the time as a “young nation,” *expecting* to grow and advance. It was perhaps expectable that a world's fair in that heartland city, held as a worldwide depression in the 1930s inflicted a serious interruption on the adolescent nation's onward-and-upward course of development, would call itself the “Century of Progress Exposition.” Americans believed progress was inevitable, and were disinclined to question decades later the slogan “Progress is our most important product” in TV commercials narrated by an actor who later became the nation's president.

3. The new challenge

But today again we live in a troubled time, in various ways reminiscent of those 1930s. Erosion of optimism today has deeper ecological roots than sociologists have been inclined to consider. The lack of vital ecological insights, both among the public (and their elected representatives in government) and among most sociologists is proving tragic. Principles of ecology as developed in the biological sciences suggest that this twenty-first century will most probably be seen in retrospect as “the bottleneck century.” Human societies will have had to pass through a period of monumental hazards, resource insufficiencies, hostile interactions, and inequitably distributed hardships. Human numbers will have ceased growing; in many parts of the world, population will have actually declined. Standards of living will have fallen.

Sociological attempts to explain these conditions and calamities will be constricted by lack of ecological understanding. Sociological predictions will likely founder in misconception of our true ecological condition, misconceptions enabled by our anthropocentric restriction of the scope of “human ecology” (Freese, 1997).

Public recognition of, and adequate adaptation to, the deteriorating ecological context of human life has been impeded by conventional preoccupations. Short-term concerns tend to blind people at all societal levels to omens of a fundamentally altered future. To elude such preoccupations, sociologists must at last abandon the notion that “human ecology” is only a minor subdiscipline of sociology, of marginal relevance to “the big issues.” That is a notion prevalent since “the Chicago School” of sociologists early in the 20th century imported into the sociological vocabulary a few ecological terms and applied them principally to the study of *urban* life.

Certain crucial ambiguities in pioneer writings about the sociological applicability of ecological principles had enabled derailment of recognition that humans are inextricably involved along with other species in ecosystem patterns and principles. This necessary understanding was lost in treatment of human ecology as *merely analogous* to bio-ecology (Catton 1992).

4. Collective response to carrying capacity deficit

Earth has just added a seven-billionth person to its contemporary human population-load as I write this, a mere dozen years after this finite planet reached the six billion mark! Moreover, much of that enormous population has been living prodigally by lavish use of non-renewable resources. In the aftermath of “the” industrial revolution, adopting internal combustion engines for the accomplishment of many human tasks had made “developed” societies increasingly dependent upon Earth’s inevitably dwindling stocks of crude oil. Since Earth’s finite deposits of this fundamentally non-renewable natural resource were destined to become scarcer and scarcer as a result of rapid use, modern lifestyles, present or aspired to, were thus inherently self-destructive. A crescendo of difficult circumstances that will confront human societies has been forecast by a growing number of ecologically informed writers (Udall, 1980; Youngquist, 1997; Greer, 2011).

This developing predicament cannot be wished away, but many sociologists have disregarded its relevance to their discipline’s concerns. However, at least collective behavior

theory in sociology (Turner, 1964) has developed enough research-supported insights to shed important light on the ways people, organizations and societies can be expected to respond to such circumstances. Such light may be as unwelcome as is the changed state of the world it reveals. Even if the facts made evident are unwelcome, sociologists are obliged to face and clarify them.

In coming decades, because of changes to planet Earth wrought by human activities since the industrial revolution, mankind is certain to experience frustrated hopes, declining material wealth, deteriorating quality of life in befouled and ravaged environments on every continent. Intensified worldwide competition for diminishing natural resources has become inevitable, as have mounting pressures toward social reorganization along unwelcome lines (see Brown, 1981; CEQ and Dept. of State, 1980; Hayes, 1979; Henshaw, 1971; Lerner, 1981; Peccei, 1981; Stoel, 1979). On the basis of collective behavior theory we can expect one or more of the following responses: panic, terror, genocidal wars. These are likely responses to our deepening ecological predicament. Only if accurately foreseen, may the pressures otherwise likely to induce destructive responses not have to impel people and nations to commit disastrously misguided and seriously counterproductive reactions.

5. The situation confronting humanity

Humanity's ecological situation can be succinctly described as follows: Earth, the solar system's third planet from the sun, is the sole dwelling place for our species, and functions both as the source of material supplies required for whatever we do and as the repository for noxious and/or toxic by-products of our activities, as well as the arena in which we live and act. Seven billion of us residing on this planet, many living with the aid of potent technology, are an enormous ecological load. The load imposed upon Earth's ecosystems has grown so large that the three functions of environment—"supply depot," "activity space," and "disposal site"—increasingly encroach upon one another. Recognition of that should become an essential part of modern sociology's working paradigm.

Human demands have grown to exceed sustainable yields from four indispensable biological systems: forests, cropland, grazing lands, and fisheries (Brown, 1981; Catton, 1980; Webb and Jacobsen, 1982). Not only for this reason, but also because the most technologically advanced peoples have committed themselves to largely disregarding the distinction between renewable and nonrenewable resources, we are courting disaster. A nonrenewable resource is anything we use in any of our activities that doesn't grow like a crop—so that it only gets replenished at rates that are enormously slower than our human ability to use it up. Substances that are resupplied only by slow geological processes (minerals, fossil fuels) cannot perpetually be obtained for human use in escalating (or even in constantly large) annual amounts. Any society's reliance upon drawing down finite and diminishing stocks of nonrenewable resources means present human wants can be satisfied only by depriving posterity of those resources.

These statements may not have been regarded as "principles of sociology" but that neither falsifies them nor makes them sociologically irrelevant. Because what we use up our descendants will lack, we are stealing from posterity. Both theft of any sort, and intergenerational relations, are legitimate sociological topics.

Natural systems have limits of tolerance that produce a bundle of interacting constraints on human action. Most sociologists have been as reluctant as people in other walks of life to confront this fact. These constraining influences from nature's systems are pressing people and nations toward zero-sum competition. Over the past century, we humans have brought upon ourselves an era of carrying capacity deficit. Collective behavior theory achieved by sociological studies has advanced enough to show us the social dilemmas and structurally conducive conditions for targeted hostility we can expect in such circumstances. After centuries of economic and social development which we regarded as progress, mankind now faces sharp reversal, making revolutions likely within nations, and wars over access to scarce resources likely between nations. People have been slow to recognize the vulnerability of ecosystems and the seriousness of pressures that overload them, but such awareness may be an essential basis for a critical ability needed to protect us from panic and from resort to catastrophic violence.

Our societies have already inflicted by customary collective activities significant changes to the physical and biological world upon which human lives and activities depend. These have rendered continuation of present patterns of sociocultural allocation of valued goods impossible. Distribution norms that were long taken as normal will inevitably be challenged. Sociologists should ask, among other things, whether such challenges are likely to involve violence. With what consequences?

Distribution standards that were formerly workable and prevalent but are becoming increasingly infeasible and obsolescent will continue to have their adherents. Cultural lags (Ogburn 1922) may be expected, so outmoded standards will continue to express themselves in unrealistic expectations. This will multiply tensions and value conflicts between social classes, or between other distinguishable identity groups—and between the living and the unborn. Indeed, some of the tension and violence occurring within the most recent half century or so should not have surprised us. It has been known for some time that future resource shortages would occur. As early as the first decade of the twentieth century, President Theodore Roosevelt warned of the need for conserving natural resources, and nearly five decades later in 1952, President Truman's Materials Policy Commission, headed by William S. Paley, acknowledged that the United States had a "Gargantuan . . . insatiable" appetite for materials, so even that long ago there was scarcely a metal or mineral fuel for which the quantity Americans had used since the beginning of World War I had not already exceeded the total previous cumulative use by all nations (Wyant, 1982: 368-369). Ever since Western societies began to industrialize and became increasingly dependent upon using nonrenewable resources, eventual scarcity has been our destiny.

6. Illusions persist

People who live in industrialized nations have commonly supposed any future beset with pervasive scarcity was "merely theoretical." Problems of scarcity were projected to some future time, to some other place, or to some different social stratum than our own. Almost non-existent was public awareness of the fact, or of its human significance, that in nature an environment's suitability for a particular use can be diminished by overuse. Recognition of that fact was obligatory for ecologists; it should have been equally so for sociologists (Odum, 1975).

Middle-class people in North America, having little or no warning by sociologists, went on escalating their energy consumption. This, together with political tensions in a part of the world from which we were increasingly obtaining an indispensable portion of the fuel we consumed, made scarcity "real" at last. To our astonishment we found that our own daily lives were affected by geophysical facts and far-away turmoil (Peachy and Lerner, 1981: 454).

Much public discussion of current troubles seems persistently oblivious of this finite planet's ecological constraints. Familiarity with the ecological concept of carrying capacity remains rare. Therefore people at large, and sociologists to a shocking degree, do not yet comprehend the full range of social, political, and economic implications of our transition from a condition of carrying capacity surplus to carrying capacity deficit.

Carrying capacity is a term denoting the amount of use of a particular kind that an environment can endure more or less perpetually without impairment of its suitability for that use (Catton, 1983). Any user population, animal or human, imposes a load upon the environment that supports it. Loads may temporarily exceed carrying capacities, but when they do, environmental degradation *from overuse* has to undermine carrying capacity, and this leads sooner or later to some form of load reduction—either a reduced number of users or reduced per capita intensity of their use of the environment. These points are true even when the environment in question is an entire planet.

For several centuries after Europeans got over supposing the world was flat, and began to discover land masses in another hemisphere, the New World's existence (and its "newness") powerfully shaped history and human expectations. An unanticipated abundance of resources invited exploitation. Although the term "carrying capacity" had not yet been coined, the thrust of history in those centuries was predicated upon what seemed a vast carrying capacity surplus. Eventually there was an industrial revolution—which hastened conversion of carrying capacity surplus into carrying capacity deficit, while *seeming* to magnify abundance.

Mankind must now struggle to come to terms with an unfamiliar situation—the replacement of a marvelous but temporary carrying capacity surplus by a deepening carrying capacity deficit. The deficit has resulted from exponential human load expansion during the past several centuries, due both to population increase and technological progress. Human societies have been undergoing great change in recent decades. Sociologists attempting to describe and explain contemporary social change (Nordskog 1960; Etzioni and Etzioni 1964; Noble 2000) have largely neglected the influence of a possible transition from carrying capacity surplus to deficit. These concepts have been deemed "not social" and thus outside the domain of sociological thought. Their exclusion from a conventional sociological vocabulary, however, does not diminish their effect.

Sociologists who want to clarify and explain future social actions must acknowledge three converging trends that have put humankind in much deeper peril than is generally understood. First, there are many more humans inhabiting this planet than it can sustain. Second, technological advances of recent centuries have made gigantic and prodigal the per capita resource appetites of people and their per capita environmental impacts. Third, even though, as the symbol-using species, humans conceivably could do better at anticipating future circumstances and planning ahead, the general evolutionary heritage of *Homo sapiens*

continues to impede foresight. Like other species evolved by natural selection, we adapt to *existing* circumstances, not to future conditions our adaptations may be creating.

In the 1980s, global economic recession appreciably reduced effective demand for various resources (despite continuing growth of world population and continuing aspirations for modernization among “underdeveloped” countries). A so-called “oil glut,” following soon after the OPEC-embargo-induced shortages, tempted many to resume old illusions that scarcity is not inherently the destiny of industrialism. To avoid self-deception in this matter, it was important to recognize that filled storage tanks and falling oil prices in no way reflected any increase in the stock of crude oil contained in Earth’s crust. People (apparently including even the majority of sociologists) too easily forgot the nonrenewable nature of petroleum and many other resources still required by conventional human activities. Demand for various non-renewable natural resources was only slightly (and temporarily) abated then or by subsequent economic recessions. We allowed ourselves too often to disregard the interdependent ecological limits upon a populous Earth’s capacity to serve human needs in three ways—as home, supply depot, and disposal site (Dunlap and Catton 2002).

Oil depletion may hit soonest and hardest (Deffeyes 2005), but as a political science PhD and former Foreign Service officer William Ophuls (1977: 9) tried to tell the world some years ago, scarcity is no longer merely a problem with incidental short supply of some isolated commodity. It takes “a new and more daunting form” that he called “ecological scarcity.” The modern world must address not just “simple Malthusian overpopulation and famine,” he wrote, “we must now also worry about shortages of the vast array of energy and mineral resources necessary to keep the engines of industrial production running . . .” In this changed world, he said, we must also be concerned “about pollution and other limits of tolerance in natural systems, about such physical constraints as the laws of thermodynamics. . . .” (Greer, 2011; Heinberg, 2003, 2011). Unless sociologists take such “non-sociological” constraints into account, the sociology discipline is likely to cause its adherents to misconstrue future events and draw erroneous conclusions about social changes observed in decades ahead. Advice they might offer to policy-makers could thus be seriously counterproductive (Catton, 2009).

7. Collective behavior prospects

As mankind increasingly encounters depleted stocks of essential non-renewable resources required to support modern lifestyles, what changes in human relationships must be expected? A dramatic increase in the potential for conflict, seemed likely to Peachey and Lerner (1981: 454). They expected there would be “heightened distrust and suspicion.” They expected we would also see “the complete justification of what would otherwise be considered selfish and immoral behavior.” Competition would be “perceived in ‘zero-sum’ terms” with “derogation of the perceived competitor.” Many events of the past three decades seem to confirm their expectations. They foresaw acceptance and even admiration for successful use of extra-legal means in competitive pursuit of goals.

In a context of resource scarcity, individuals will anticipate competitive encounters and this anticipation will stimulate cognitive changes as a means of adapting. Contesting nation-states will tend to vilify each other, increasingly portraying the competitor “enemy” as

untrustworthy—and perhaps so malevolent that eventually “any action” in opposition to the enemy “is justified, including ‘pre-emptive’ aggression” (Peachey and Lerner, 1981: 453-454; cf. Klapp, 1972: 158). These expectations appear to have been born out in the conduct of recent U.S. wars.

Ecological knowledge is fundamental to understanding the lives, the opportunities, and the limitations of humans (and of human societies) in a world shaped by and comprising geological and meteorological features and billions of non-human organisms—i.e. the real world. The environment we inhabit, with all its given biological, chemical, and physical characteristics, often tremendously influential, has changed enormously in recent times. Human societal actions have wrought much of the change.

To anticipate and explain the catastrophic changes set in motion by twentieth-century progress, and its division of the human world into “overdeveloped” and “underdeveloped” societies, sociologists must begin at last to see sociology itself as an excessively circumscribed treatment of processes requiring a fundamentally ecological worldview. If sociological thought becomes less anthropocentric it will be better prepared to understand future reality.

8. Return to foraging

It is time for sociologists to emancipate themselves from certain assumptions that have been imbedded too deeply in the surrounding modern culture. Human lives depend on adaptively using the planet on which we evolved. Not all major changes in human ways of using it have been actual progress. This might have been easier to see if academic departments had not become too large and unwieldy, so that sociologists and anthropologists largely drifted apart into separate disciplinary organizations. Sociologists mostly focused their attention on “modern” societies and their components, and largely lost interest in non-literate peoples, in hunter-gatherer societies. We knew, as taken-for-granted background, that some people especially in hunter-gatherer societies had long ago discovered ways of “managing” local ecosystems (and begun planting and harvesting crops and herding consumable or otherwise useful animals). We assumed this was an important step forward. We assumed it was a permanent achievement, that could be just accepted as a given fact. Pre-agricultural societies became the province of anthropologists, and ceased to interest most sociologists.

Ecologically speaking, those early people had taken steps to ensure local portions of nature would more reliably provide nutrition for the human species, perhaps to the detriment of local populations of other competing species. We never doubted that advancement by *Homo sapiens* from foraging to farming was advantageous, and if ever superseded it would be by another advancement.

With the industrial revolution, however, some *Homo sapiens* became committed to reliance again on natural resources *not* subject to annual renewal by humanly managed processes of reproduction among domesticated resource species. Industries and the general public in modern societies seemed to suppose *rates of discovery* of previously unfound deposits of iron ore, coal, petroleum, etc. were equivalent to *replenishment* of stocks being drawn down by our extraction efforts (which we conventionally called “production,” even though nature, not human effort, had *produced* the substances we were taking out of the Earth). As long as

discovery rates matched or exceeded depletion rates we were comfortably oblivious of future supply problems.

We *Homo sapiens* tended not to ask how sapient this conventional thoughtway truly was. But a substantial portion of our species (we called ourselves “the developed nations”) had reverted to foraging—hunting and gathering resources available only in places and amounts determined long ago by nature, not by human management. We had new foraging tools—e.g., drilling rigs and enormous offshore oil platforms, vast digging machines, dynamite, chainsaws, huge pumps, etc.. But reverting to foraging in support of modern living (on a planet we seemed to forget was finite) could not ensure an onward-and-upward future for our species. It ensured instead that we would rapidly deplete nature’s deposits of one essential resource after another and continue building our societies around unrealistic expectations of perpetual growth in numbers and affluence, on a planet that would not get any larger.

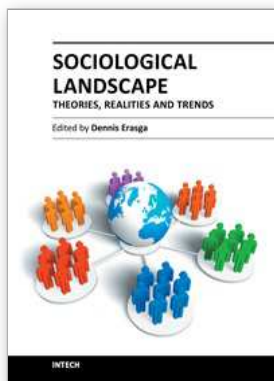
Some sociologists today define their field as a humanistic study (involving “qualitative” reasoning). Others favor a quantitative approach, regarding themselves as adherents of “scientific method.” For both types, until they escape the blinding assumptions of the surrounding culture enough to see that reversion to foraging has been a *retrograde* step—which must have serious adverse consequences—sociological efforts to explain future social change will misfire.

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More than the usual academic textbook, the present volume presents sociology as terrain that one can virtually traverse and experience. Each version of the sociological imagination captured by the chapter essays takes the readers to the realm of the taken-for-granted (such as zoological collections, food, education, entrepreneurship, religious participation, etc.) and the extraordinary (the likes of organizational fraud, climate change, labour relations, multiple modernities, etc.) - altogether presumed to be problematic and yet possible. Using the sociological perspective as the frame of reference, the readers are invited to interrogate the realities and trends which their social worlds relentlessly create for them, allowing them in return, to discover their unique locations in their cultures' social map.

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