

USE OF RESOURCES AND SPACE

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Summary

This article uses scale theory to examine how different cultural processes of sapienization (producing and maintaining people), politicization (producing and maintaining governments), and commercialization (producing and maintaining business enterprises), shape the use of resources and space in ways that impact the quality of human life for all peoples, including future generations. These cultural processes are among the driving forces of cultural change. They also produce distinctive scales of culture and cultural cycles that have profound implications for sustainability. Different culturally patterned ways of developing resources and space, and the effects of scale are also reflected in the differential distribution among individual households of many of the indicator variables of human well-being used by the United Nations Commission on Sustainable Development. The fundamental insight of scale theory is that the growth process will be intrinsically inequitable in the absence of deliberate and powerful democratic countermeasures. Sustainability is treated here as the universal human problem of how to maintain viable cultural systems within the scale limits imposed by particular social power arrangements, technologies, and environments. All people need social power to achieve their goals. Scale theory predicts that system-threatening imbalances and instabilities will unintentionally intensify as communities, nations, and economies grow larger. It is an open question whether scale increases can be sustained, but highlighting scale itself as the problem is an important first step toward solutions.

1. Introduction

This discussion will focus on the cultural processes that expand the economic dimensions of social power that are reflected in the use and distribution of economic resources, including finance capital and property within specific societies. The underlying assumption is that the way people use resources and space is primarily a function of the scale of society and culture, which in turn is limited by the way social power is organized. Thus, the most significant cultural changes are those that produce growth and concentrate power by removing the cultural limits to scale. Throughout the prehistory and history of human cultural development up to the present, growth has steadily undermined sustainability whenever it has been an elite-directed process that has disproportionately concentrated social power while introducing new sources of instability. This analysis suggests that scale itself, and the organization of social power are the crucial barriers to sustainability.

2. Cultural Processes, Resources, and Change

The way people in different cultures use resources and regulate access to space requires the use of social power and is directly connected with the forces that drive culture change. Social power is how people achieve their goals in relation to others and, along with culture, is a fundamental prerequisite for human survival. Total powerlessness is equivalent to complete servitude, and is an inadequate basis to successfully reproduce either people or culture. Four overlapping networks of social power potentially exist in all human societies: ideological, economic, military, and political. What is most significant about these networks of power is that cross-culturally they vary tremendously in the specific ways they are implemented. The scale and scope of particular power networks, and the degree to which they are institutionally regulated and or directed by particular individuals, are crucial variables for understanding the use of resources and the viability of cultural systems.

People can use their social power to accomplish diverse ends, but the most fundamental use of power mobilizes resources to support the crucial cultural process of *sapientization*: producing and maintaining individual people (*Homo sapiens*), as well as human society and culture. Sapientization is a complex cultural process that depends on people having the ability to employ concepts and symbols, material culture, speech, socialization, cultural transmission, and natural resources to support and maintain themselves. Culture is here viewed as the socially transmitted information that shapes human behavior. Sapientization involves a series of culturally based actions that satisfy basic human needs for food, shelter, and security, and the maintenance and reproduction of households. In order for people to be successful, sapientization also requires that people be able to effectively regulate social power and social scale, and maintain access to resources and space.

In the course of cultural development three overlapping methods of organizing social power have arisen in sequence: domestic, political, and commercial. Each method of organizing power is directed at different objectives and produces societies of different scale. Each has different implications for resource use and sustainability.

3. Resource Use in Domestically Organized Cultures

Domestically organized social power supports the sapienization process, and is based on households. Because it is exclusively directed to the support of households, domestically-organized power is highly conservative and tends to inhibit growth, while fostering social equality, balance with natural resources and natural cycles, and overall cultural stability. There are few cultural incentives for individuals or households to accumulate resources beyond annual needs.

The earliest human societies organized power exclusively at the domestic level by means of the household. As will be shown, domestically organized power proved to be the best way to support the sapienization process. However, when sapienization is the dominant cultural process in a society, individuals can accumulate only a limited, but sufficient, concentration of social power, social networks remain small in absolute terms, and relatively few resources need to be mobilized. Perhaps the most important finding of cultural anthropology and archaeology is that the most sustainable societies ever known were relatively small in scale and domestically organized. As long as households supported themselves within largely autarkic, or economically self-sufficient, politically autonomous, small bands or villages of under 1000 people, households were likely to enjoy relatively equitable access to space and resources. In such small-scale societies households were able to set their own production and consumption goals. These small societies were structured by the unanimous consent of their members to maintain *sapienization* as the dominant cultural process. It is thus not surprising that global population probably never exceeded 85 million people when all cultures in the world remained domestically organized. Growth in the scale of either society or economic production offered most people no obvious advantages, whereas long-term stability helped households enjoy the rewards of security, cooperation, and leisure. The global population ceiling was determined by the level at which specific natural environments could sustain the productive technologies that could be employed by individual households and effectively reproduced in the absence of centralized political authority or commercial business enterprise. Populations could remain stable and stationary in the absence of political or commercial pressures for increased production that might require larger families, or higher densities. Total population was ultimately limited in these small societies by the ability of individual women to make independent fertility planning decisions in their own self-interest, although in this they were supported by the belief systems and institutional structures of their cultures. Diminishing returns to the intensification of labor and technology in subsistence production ultimately sets limits to the use of space by domestically organized societies. Unless external force is imposed, independent households only willingly increase population densities up to their own comfort levels.

Each adult household member in a small-scale society typically maintains sufficient social power to guarantee their access to the economic resources needed to maintain and reproduce themselves. This allows them to individually set their own production goals, select their own technology, and freely distribute the outcome of their economic efforts. The surprising outcome of domestically organized economies is high levels of material prosperity, and leisure, within the context of modest levels of resource consumption. Small total population, and generally low overall density, means that it is not personally

advantageous, or even feasible, for people to treat space, or land, as privately owned, permanently alienable personal property in autonomous, domestically organized cultures. Land and natural resources may be owned, managed, and allocated to individual households on the basis of membership within socially inclusive regional kinship networks. The effect of domestically organized power is that space, or land, remains communally owned public property. However, because total demand on resources remains low, there is ordinarily little likelihood of any “tragedy of the commons” occurring due to the individual pursuit of private gain at public expense.

Research in the tropical forests of South America demonstrates how very effective the domestically organized use of space and resources can be. For example, the Ashaninka and Machiguenga peoples conduct their primary economic activities in the Peruvian Amazon within widely dispersed household groups of only 25 to 50 people. They also have access to larger exchange networks of only a few hundred people that in turn connect with national and even global exchange networks. With a total regional population of some 21 000 people scattered across some 51 813 square kilometers (20 000 square miles) of territory, in 1970 the Ashaninka were living at a low population density of barely more than one person per 0.4 square kilometer (per square mile). Space and resources were so abundant that each household maintained access to sufficient areas of forest and river to meet its subsistence needs for garden produce, fish, game, and forest resources. Adults were able to meet all their material needs for food, household maintenance, and manufactured goods with less than 8 hours of daily effort employing relatively simple technology.

Domestic production systems can be highly efficient and productive, even without fossil-fuel powered machine technology. For example, in a single small garden the Ashaninka were able to produce with simple hand tools some 13 636 kilograms (30 000 pounds) annually of manioc, their staple food crop. This was more than double average household requirements for all consumption needs. The Ashaninka produced their own houses, food, medicine, and clothing. They were well-fed, comfortably housed and clothed, healthy, and self-confident.

Archaeological evidence suggests that the ancestors of the Ashaninka, and similar small-scale societies, occupied the same territory for thousands of years. When politically or commercially organized cultural systems become dominant over territories originally occupied exclusively by indigenous peoples in domestically organized cultures, population suddenly expands, the pressure on space and resources accelerates, and the sapienization process is undermined. Relatively sustainable cultural systems are replaced by or transformed into less sustainable systems. When the sapienization process is weakened many people are impoverished to such a degree that they may have difficulty meeting their most basic needs. For example, the Shipibo people in the Peruvian Amazon were forced to systematically deplete their forest resources and degrade their land by intensive cash-cropping since the 1950s when large numbers of invaders began to occupy their territory, making it impossible for the Shipibo to meet the spatial requirements of their domestically organized production system. Similar processes have been reported in other parts of Amazonia, and worldwide since 1800.

4. Domestically Organized Use of Space

The use of private domestic space is perhaps the most sensitive measure of the organization and distribution of social power and overall scale in any society. The size of the domestic establishment is directly reflected in the surface area of dwelling space, in the dimensions of surrounding property, and in the number of dependents attached to the household. In societies organized only at the domestic scale, households are all of relatively the same size, and dependents are likely to be close kin. There were no cultural incentives for ostentatious housing in small-scale societies, in the absence of either rank, or social class. In the case of the Ashaninka discussed above, an informal leader might have a slightly larger house and garden area than other households in order to meet the requirements of hospitality, but the difference would be barely noticeable. A typical Ashaninka house with a five-person household covered 42 square meters (450 square feet) of floor space. This yields a domestic living space allocation of 8.4 square meters per person, which is precisely the average that archaeologists have found for other domestically organized cultures.

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Biographical Sketch

John H. Bodley is professor of anthropology at Washington State University, where he served as department chair from 1992 to 1996. His BA 1965, MA 1967, and Ph.D. 1970 are from the University of Oregon. He has worked as a field zoologist in Mexico from 1961 to 1962 for the University of Kansas, and conducted anthropological fieldwork with indigenous groups in the Peruvian Amazon during 1966–1969, and 1976–1977, supported by research grants from the National Science Foundation. He was a visiting researcher at the International Work Group in 1980, and a visiting lecturer at the University of Uppsala in 1985, and the University of Vermont, 2000. He was a member of the American Association for the Advancement of Science Committee on Scientific Freedom and Responsibility in 1991–1994. His principal publications include *Victims of Progress* (1975, 1982, 1990, 1999), *Anthropology and Contemporary Human Problems* (1976, 1985, 1996, 2001), *Cultural Anthropology: Tribes, States, and Global System* (1994, 1997, 2000), and *Cultural Ecology of Amazonian Palms* (with Foley C. Benson, 1979).