

## 17.4: The Third Commandment

GIVEN THAT EVEN AT THE RISK OF GLOBAL CATASTROPHE, **TECHNOLOGY WILL BE USED** IN ATTEMPTS TO MEET HUMAN NEEDS, IT IS ESSENTIAL TO ACKNOWLEDGE THE ANTHROSPHERE AS ONE OF THE FIVE BASIC SPHERES OF THE ENVIRONMENT AND TO DESIGN AND OPERATE IT WITH A GOAL OF ZERO ENVIRONMENTAL IMPACT AND MAXIMUM SUSTAINABILITY

One of the most counterproductive attitudes of some environmentalists is a hostility to technology and to technological solutions to environmental problems. Humans are simply not going to go back to living in caves and teepees. Technology is here to stay. And even recognizing that the misuse of technology could result in catastrophe, *it will be used* to attempt to fulfill human needs. To deny that is unrealistic and foolish.

So a challenge for modern humankind is to use technology in ways that do not irreparably damage the environment and deplete Earth's resources. In so doing it is essential to recognize the anthrosphere—structures and systems in the environment designed, constructed, and modified by humans—as one of the five main spheres of the environment (see Chapter 8, Section 8.6). Some of the major parts of the anthrosphere are shown in Figure 17.2

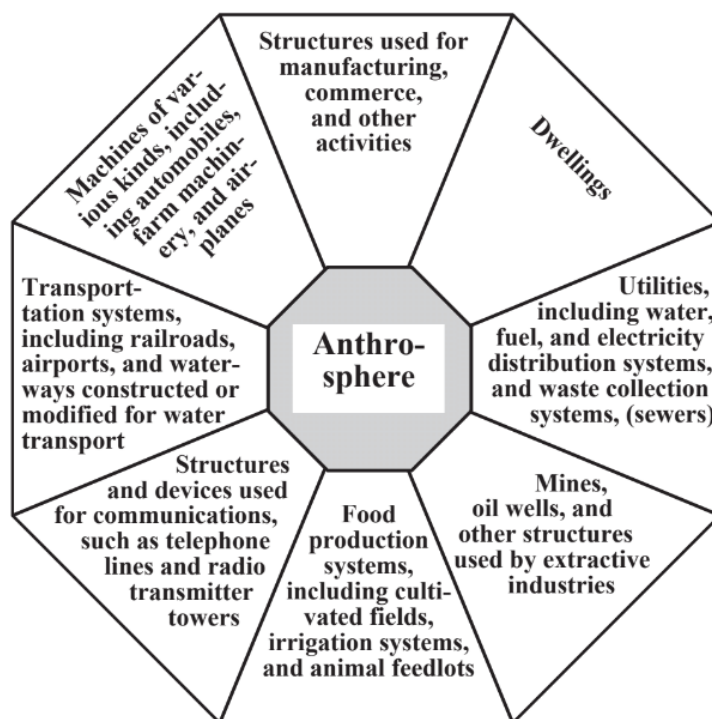


Figure 17.2. The anthrosphere is a multifaceted system designed and constructed by humans.

A key to sustainability is reorientation of the anthrosphere so that (1) it does not detract from sustainability and (2) it makes a contribution to sustainability. There is enormous potential for improvement in both of these areas.

Much is already known about designing and operating the anthrosphere so that it does not detract from sustainability. This goal can be accomplished through applications of the principles of industrial ecology discussed in Chapter 13. Basically, the anthrosphere must be operated so that maximum recycling of materials occurs, the least possible amount of wastes are generated, the environment is not polluted, and energy is used most efficiently. Furthermore, to the maximum extent possible, materials and energy must come from renewable sources.

The anthrosphere can be designed and operated in a positive way to improve and enhance the other environmental spheres. For example, modern earth-moving equipment with its capacity to move enormous amounts of material, though largely used in the past in ways that harmed the environment, can be employed positively to modify the geosphere surface in ways that will enhance the biosphere. Some specific examples of things that can be done are the following:

- Restoration of topsoil in areas depleted of this resource by poor farming practices or by contamination by wastes and pollutants
- Terracing land to prevent water erosion of soil

- Removal of obsolete and abandoned anthropogenic structures, such as old steel mills, and decontamination and restoration of the sites upon which they are located
- Construction of wetlands that can serve to restore wastewater to a quality enabling its release to the environment
- Pumping water underground to restore depleted aquifers
- Addition of “meanders” to streams, some of which have been unwisely straightened in the past, to reduce erosion and flooding
- Dredging of sediments from bodies of water and sediments to restore conditions conducive to aquatic life
- Construction and operation of reverse osmosis plants to remove excess salt from irrigation waters
- Construction of electrified railroads to replace inefficient, resource intensive, environmentally damaging truck transport

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