Bio-Communications

Introduction

Bio-communications may be considered an important part of Biopolitics. It's development can demonstrate both to the political decision-makers and to the public at large how useful the living organisms (bios) can become for the people in their diverse activities. Information storage, processing and transmission can be regarded as part of daily routine in modern society. Bios offers us new elegant, expedient and reliable devices and techniques for this purpose.

Developing Computer-Based Idea Banks on Biopolitics

Recently, the information exchange among computer systems of different countries has been considerably facilitated by the establishment of international data bankson different fields of research. It is very important to reunite the efforts of those interested in bios by setting up an international computerized Biopolitical Bank of Ideas. This would enable the international expert commissions to more quickly assess the data from different regions of the world and to take the necessary measures without delay. One suggested form of visualization of the biopolitical information is to use a detailed world mapintroduced into the computers of the biopolitics coordinating centers, so that the regions where urgent measures are required could be pinpointed.

Thus, bio-communications can provide for an accelerated exchange and distribution of information, which is so important for the present era regarding the exchange of information.

Promoting Biopolitics through Mass Media

Not merely the method of information transmission, but also the qualityof information can be ameliorated. The modern mass media should play an important role in promoting the biosconcepts and values. Why should our leading newspapers or TV programs be full of accidents, murders, disasters and hostilities? The public should become more sensitized in the news on environmental preservation, the humane treatment of animals, cooperation of people across national and regional barriers and acts of charity. The people may also be encouraged to spend more time reading popular articles and books, enjoying the images of bios. Education can sensitize people to bios-related matters and will increase a general interest in them. Following suit, the mass media will be disposed to pay more attention to bio-environmental issues, further stimulate interest in the positive,encouraging news concerning the maintenance and promotion of bios.

Use of Satellites in Bio-Communication

Within the framework of the multimedia approach to promoting bios, attention should be given to instantaneous transmission of information using satellites. "Satellite television networks, for example, could provide a bulletin or update on environmental issues along with the weather and stock market reports which accompany each news program." Special educational programs and curricula can be developed to teach the people fundamentals of biology as related to biopolitics with the aid of satellites. Monitoring of the current state of the bio-environment is another important mission of satellites in terms of biopolitics.

Bio-Sensors

The sensitivity of bios to chemical agents and also to such physical factors as temperature and illumination, has been prerequisite for the development of the biosensorsBiosensors are devices composed of a biological structure (enzyme, organelle of a cell, whole cell, tissue, etc.) responsive to a specific factor, and a detector converting its response into a measurable (usually electrical) form. There are several types of bio-sensors, such as the potentiometric biosensors based on the electrical potential difference created by enzymatic reactions of the substance detected and the optrodes which register the optical effects of enzymatic reactions, such as formation of colored products. Biosensors are currently employed on a large scale for rapid clinical analyses at a patient's bed and in biotechnological industry to monitor the production process.

Bio-Computers

Biosensors can also form part of more complex devices, the bio-computers. A bio-computer, according to the schemes currently designed will include a great number of bio-cells, each alternatively assuming the two possible states of the binary system of information storage. These states depend on whether or not an enzyme-catalyzed process has taken place, or they correspond to the different forms taken by a biological structure.

For instance, cytochrome c3 isolated from the bacterium Vibrio alginolyticus is characterized by different electrical conductance in the reduced and the oxidized form. Based on this fact, cytochrome c3 can be used as a binary bio-cell. Computers principally can work on the basis of chemical signals used by the neurons in the brain.

Not only the structural elements, but also the basic principles employed can be based on biological concepts. The brain deals with several problems in parallel not sequential fashion. Currently, new computers incorporating the parallel-processing principle exist namely the super computersor transputers which could give rise to neurocomputing networks. Neurocomputing networks can be employed for understanding continuous speech and identifying handwritten characters. This improved artificial intelligence can suffice to cope with such complicated problems as diagnosing a disease.

Imitating Sense Organs in Technology

Much useful information can be obtained through the studies of the animal sense organs. For instance, recognition of visual images by robots has become possible through simulation of the operation of the organs of sight in animals. Improved understanding of acoustic communication in diverse forms of bios (e.g., songs of the whales and dolphins, humming of the bees and wasps) can increase the potential of the technical devices analyzing acoustic waves. The result: the invention of a speaking computer capable of automatic translation of a message from one language into another, enabling one to speak Japanese in Japan and being translated into French, German, or Italian (depending on the canton), in Switzerland over the phone. Currently, computer-based voice recognition systemsare in the process of transition from the research stage to large-scale employment. Text to voice, and voice to text systems are intended to be used in telecommunication.

Until the present moment, less attention has been given to the sense of smell, as contrasted with the sight and hearing. However, olfaction provides an ancient and reliable channel of bio-communication in many different forms of life. Olfactory perceptions participate in the social interactions among animals as in the demarcation of the territories, identification of sex-related roles. Direct experimentation with animals has demonstrated that the animals recognize human-produced substances as specific messages and react to them accordingly. This primarily concerns our closest relatives, the apes. Insight into subconscious olfactory signal exchange, insofar as it may really take place among humans, would contribute to the understanding of human behaviour in different situations. In addition, olfactory signals can be used to identify persons, since each human being has a specific, genetically determined odour. A bio-computer supplied with biosensors would be able to fulfill this task.

The functioning of all the sense organs implies generation of electric signals which finally reach the central nervous system. This general biological principle can serve for the development of new communication systems. In clinical practice, one can use these ancient channels of information to directly address a specific organ of a patient. This is currently the case with Medphone,a transtelephonic heart defibrillator connecting the hospital to the home of a high-risk patient.

Objectives:

- to sensitize media on the need to include the bio-environment in the presented information;
- to develop new directions in information exchange based on bios-related databanks and communication channels;
- to make the basic concepts of the bios theory available to specialists dealing with research and development of communication systems;
- to bring across new potential ways of communication based on biological models still unexplored and unemployed;
- to encourage people to envisage other forms of terrestrial life as potential partners for communication; i.e. to develop the power of understanding their feelings, emotions and needs.

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