

TELECOMMUNICATIONS SCIENCE AND ITS RELATION TO BIOS

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The unprecedented progress in all scientific fields during the past 30-40 years surpasses all and any previous success of mankind. Almost all technical scientific fields have reached the limit of natural laws. The majority of macroscopic phenomena have been analysed, well understood and put at the service of man. A substantial amount of progress into the understanding of microcosmos has also been achieved.

The telecommunications field which deals with the study and implementation of generation, processing, storage and transmission of information whether it be voice or any type of information signal or data has reached the limit of many conventional laws. Computers have been able to recognise and synthesise natural voice, transmission systems can transmit information at the speed of light that was unthinkable only a few years ago. In order, however, to continue to satisfy the needs of modern society with ever increasing standards of living universally available, the requirements on all subfields of telecommunications are greater than what technological progress is presently envisaging, through extrapolation of the presently available data, to provide.

Hopefully, elements of biological processes, the storage and information processing capability of human brain and the transmission of information between the centres of information generation and order execution within living creatures eventually eliminate the presently imposed constraints by conventional natural laws. Some animals can recognise with great precision potential danger from great distance using the sense of smell. Can a similar process help human communication? Can a person be recognised by a computer by his body odour? This would eliminate theft because it would create an impenetrable shield against such a vice. Scientists have already built memory chips based on the structure of the neuron of the common garden snail. In the future it is believed that chips may be actually composed of biological molecules. That feat could boost the information storing capacity of a chip a billionfold.

The objective of this study is to analyse the potential areas within the "biological telecommunication system" that are being investigated with the purpose of serving as a model for the macroscopic telecommunication field that will help make information and knowledge universally available to all human beings. With more knowledge and information readily available, all suspicion among human beings will be eliminated and it will eventually give way to peace and harmony in the world.

Peter Stavroulakis obtained a Ph.D. in Electrical Engineering from New York University. He has worked at Bell Laboratories on new telecommunications services. He spent three years at Oakland University and two years at the University of Athens. He has been managing director of ATT International (Greece) Ltd., and is presently marketing the entire NYNEX product/services portfolio in Europe. He serves on the Board of Editors of the Journal of the Society for Machine Intelligence. He has prepared and edited two special issues in the Benchmark Book series and co-edited a special issue of the Journal of the Franklin Institute. His publications include a book on satellite intersystem interference and numerous technical papers and journals.