

"Specialization and Dehumanization."

by

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A long consideration of the factors in the rise of the Nazis in Germany and the Fascists in Italy and other situations leads to the hypothesis that the basic cause of fascism and other dehumanizing developments in advanced civilized nations is the development of a high degree of specialization in applied science and engineering. The structure of specialization in pure science was developed since 1790 by the procedures of the Royal Society of London to avoid unnecessary conflicts with religious and political authorities.

During World War II an unprecedented acceleration of applied science research and development developed new radar equipment, sonar equipment, and the atomic bomb. The atomic bomb research ~~was~~ ^{and} done along very specialized lines with tight security, produced the most spectacular impact on civilization to the casual observer. However the MIT Radiation Laboratory development of RADAR had a more profound impact on the structure of science, applied research, and eventually will have an impact upon political ideology. The unprecedented application of Maxwell's Equations governing the behavior of electromagnetic waves to the practical problems of radar established the environment for a jump ahead in the theory of communication. The development of information processing techniques for radar laid the base for Shannon and Tuller to independently formalize the theory of electrical communication. In addition the bringing in of Wiener into the mathematical problems of fire control radar led to the generalization of negative feedback circuits in the development of Cybernetics.

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These same electrical communication theory techniques which were very important in the defeat of the Nazis militarily during World War II now appear to have the potential of retarding the rise of authoritarian conformity in the scientifically advanced countries of the world. These interdisciplinary techniques have the promise of making/^{unnecessary} the narrow specialization which permits authoritarian leadership to control science and engineering, and eventually society, to be dispelled through the development of common concepts in the major branches of science so that the electrical engineer becomes more truly an interpreter of science in terms of human needs.

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