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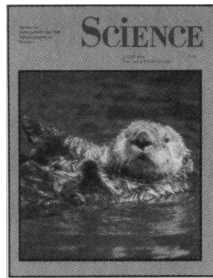
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**COVER** In the Aleutian Islands, Alaska, sea otters (*Enhydra lutris*) prey upon benthic herbivores (mostly sea urchins), which in turn prey upon benthic seaweeds. Detritus from these seaweeds fuels production in nearshore food webs, such that organisms at islands with otters and abundant seaweeds grow faster than do those at islands dominated by herbivores. See page 170. [Photograph copyright Jeff Foott]

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## Communism, Capitalism, and Dissent

The recent confrontation between the reformers and the authorities in China was presaged by a controversial reform movement in the scientific community. The conventional wisdom from newspaper headlines is that communism is a failed system and that reforms to introduce capitalism in China are needed to mitigate that failure. If so, is it coincidental, irrelevant, or inevitable that science is involved?

The answer to that question may require another approach—to view the confrontation more as one between democratic urges and authoritarianism, a confrontation in which science has played and will play a major role. The pure capitalism, proposed by Adam Smith, does not exist in the world today any more than does pure communism. Almost every “capitalistic” state has enormous overlays of socialism, because the people in these countries are unwilling to accept the harshness and inhuman sacrifice that are part and parcel of pure capitalism. Programs of the current welfare state, manifest to greater or lesser degree in all the successful “capitalistic” nations, have pushed those nations along the path that the socialists advocated in a bygone era. Communism, on the other hand, had the phrase, “dictatorship of the proletariat,” to justify an authoritarian regime. That, it might be hypothesized, was a fatal flaw. For perhaps if communism had added some democratic initiatives, the leavening effect of free expression would have gradually modified communism to introduce capitalistic principles just as capitalism adopted many socialistic ones.

Dictatorships, like limited wars, have a way of escalating. Each new dissent, a little more violent than the previous one, pushes the dictators toward more repression. That repression works in two directions: it prevents the people from getting the information they need to work efficiently, and it cuts off feedback to the authorities to allow them to modify poor programs. Science is particularly sensitive to such information blockage. It is an endeavor that requires individuality, challenges to authority, and a minimum of centralized direction. The absence of those characteristics has a chilling effect on innovation as the quality of science emerging from the Soviet Union and China testify. A dictatorship can put up with poor science if it can depend on espionage and imitation to produce modern goods. But the standard of living in a dictatorship will consistently lag behind that of the democratic countries, that benefit from the corrective action of dissent. The old dictators of the Soviet Union, and perhaps the current ones in China, assumed that this deficiency could be handled with strict censorship and the minimizing of foreign contacts. However, science and technology have begun to remove that option. The radio and computer have been followed by satellites, fax machines, and jet travel. The dreaded comparisons with democratic standards of living keep leaking through despite barbed wire, walls, and isolationism.

Gorbachev seems to have recognized the relation between political and economic reform and is trying to introduce some democratic overlays and some capitalism. China's current leaders seem to think they can introduce capitalism without democratic initiatives. It seems unlikely that any modern nation can exist forever half-slave and half-free. The pressure on dictatorships to embrace democratic reforms will inevitably come from the longing of the human soul for freedom, but that pressure is increased by scientific advances that make it more difficult to control communications with outsiders and provide evidence that inventiveness improves the standard of living.

There is little doubt that some of the present difficulties of communistic regimes lie in the pragmatic deficiencies of communism, but democracy has imperfections too. Furthermore, it is not simple for democracies in impoverished countries to produce the discipline needed to divert current income to capital investments for the benefit of future generations. Nevertheless, the danger of the “benevolent dictatorship,” whether in the guise of one man, the proletariat, or an oligarchy, has been revealed by experience. Once those in power convince themselves that they know better than the masses, a self-defeating cycle of repression, misinformation, and corruption is initiated.

Like a chemical system approaching equilibrium, it may be that the welfare state is a thermodynamically stable system that can be achieved by introducing either socialism into capitalism or capitalism into socialism. The essential ingredient for progress is democracy, and modern science and technology make it more and more difficult to prevent that progress to a higher standard of living and a fairer society.—DANIEL E. KOSHLAND, JR.