

Applied science touches the lives of individuals and societies at many different points and in a great variety of contexts, and therefore the ways in which it has increased the power of the few over the majority are correspondingly many and various. In the paragraphs that follow I shall enumerate the more obviously significant of these ways, shall indicate how and by what means applied science has contributed hitherto toward the centralization of power in the hands of a small ruling minority, and also how and by what means such tendencies may be resisted and ultimately, perhaps, reversed.

1. In the course of the past two or three generations science and technology have equipped the political bosses who control the various national states with unprecedentedly efficient instruments of coercion. The tank, the flame-thrower and the bomber—to mention but a few of these instruments—have made nonsense of the old techniques of popular revolt. At the same time the recent revolutionary improvements in the means of transport and communications have vastly strengthened the hands of the police. In his own peculiar way, Fouché was a man of first-rate abilities; but compared with the secret police force at the disposal of a modern dictatorship or even of a modern democracy, the instrument of oppression, which he was able to forge for Napoleon, was an absurdly clumsy piece of machinery. In the past, personal and political liberty depended to a considerable extent upon governmental inefficiency. The spirit of tyranny was always more than willing; but its organization and material equipment were generally weak. Progressive science and technology have changed all this completely. Today, if the central executive wishes to act oppressively, it finds an almost miraculously efficient machine of coercion standing ready to be set in motion. Thanks to the genius and co-operative industry

of highly trained physicists, chemists, metallurgists and mechanical inventors, tyrants are able to dragoon larger numbers of people more effectively, and strategists can kill and destroy more indiscriminately and at greater distances, than ever before. On many fronts nature has been conquered; but, as Tolstoy foresaw, man and his liberties have sustained a succession of defeats.

Overwhelming scientific and technological superiority cannot be resisted on their own plane. In 1848 the sporting gun was a match for the muskets of the soldiery, and a barricade made of overturned carts, sandbags and paving stones was a sufficient protection against cavalry and muzzle-loading cannon. After a century of scientific and technological progress no weapons available to the masses of the people can compete with those in the arsenals controlled by the ruling minority. Consequently, if any resistance is to be offered by the many to the few, it must be offered in a field in which technological superiority does not count. In countries where democratic institutions exist and the executive is prepared to abide by the rules of the democratic game, the many can protect themselves against the ruling few by using their right to vote, to strike, to organize pressure groups, to petition the legislature, to hold meetings and conduct press campaigns in favor of reform. But where there are no democratic institutions, or where a hitherto democratic government declines any longer to abide by the rules of the game, a majority which feels itself oppressed may be driven to resort to direct action. But since science and technology, in conquering nature have thereby enormously increased the military and police power of the ruling few, this direct action cannot hope for a successful outcome, if it is violent; for in any armed conflict, the side which has the tanks, planes and flame-throwers cannot fail to defeat