

Scientific Developments Make New Problems

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New Technology Topic Discussed In Great Decisions

Editor's note: This is the seventh in a series of discussions in the Great Decisions program. Topic this week is "The new technology - for destruction or plenty?"

Sober scientific predictions for the late 1960's include: a man on the moon... a cure for cancer... computer machines with brain-like attributes... and training the power of the H-bomb for peaceful uses.

Yet such scientific "break-throughs," if they occur in the next decade, will bring with them problems as well as opportunities.

There is already plenty of evidence that revolutionary developments in the sciences create new political and military problems, even as they introduce new benefits to mankind. Earth-circling satellites launched as part of the International Geophysical Year (IGY) are pioneers of human travel in space and of more accurate forecasting, among other "benefits."

On the problem side, the rockets which boosted these instruments into orbit can be easily launched nuclear weapons. Even the satellites could be used for electronic spying.

Result of Year One result of IGY, which ended Dec. 31, is clearly on the plus side. The program proved what can be accomplished by international scientific cooperation. Starting from this example, many experts recommend a similar international attack on worldwide problems of health.

U.S. Sen. Hubert H. Humphrey (D-Minn.), raised this question in his marathon talk with Soviet Premier Nikita S. Khrushchev last Dec. 1. Both the Russian leader and President Eisenhower have welcomed in principle the idea of global cooperation in a war on disease.

In theory there seems to be no reason why many of the world's other major problems cannot be resolved by cooperation in science and technology - not only disease, but also world food shortages; not just weather control, but also nuclear weapons control.

In Competition Science, however, in both the Soviet Union and the United States is currently putting most of its resources into competition, rather than cooperation.

Building on a pre-revolutionary scientific tradition, the Soviets are now in the front rank in many key scientific disciplines. They have al-

so used their science and technology in creating the world's second ranking industrial society.

Russian industry is younger and only half as large as America's. But it is growing at a much faster rate, and hopes to catch up in less than a generation. One of the most important tools for achieving this goal, experts say, is the heavy investment the Soviet Union is now making in basic research and technology.

Similar Investment These same experts point out that the United States must make a similar investment in technological development if it is to speed up its own economic growth, meet Russian competition, satisfy the growing needs of an expanding American population, and carry out U.S. commitments to the rest of the non-Communist world.

If job opportunities in the United States are to keep up with population growth, new business and industry will have to appear on the American scene. As automation increases the output per worker (and reduces the number of job opportunities in a given industry) the pressure becomes even more urgent - only the rapid expansion of new industry and new jobs, combined perhaps with shorter hours at the same or higher pay, will take up the slack.

Economic growth at this rate, experts agree, calls for intensive technological research and development, to create new products, new services, new national wealth.

But this is only part of the story. Experts also agree that the peaceful expansion of the American economy must take place in a cold war situation which creates other pressures on American science and industry.

The Military Imperative Russian science has helped build more than the world's second most powerful industrial society. It has also helped build what some experts fear is the world's first ranking military power. Some critics of U.S. defense policy feel that the Soviet Union is well ahead of this country in rockets and missiles - the weapons of the future. The reason, they say, is that Russia has mobilized its scientific and financial resources on a scale that the United States has failed to match.

There is honest disagreement with this point of view. Some U.S. experts believe that present U.S. defenses are sufficiently diversified and sufficiently powerful to deter Communist aggression - even if we do not match the Russians missile for missile. Other experts frankly discount Russia's claims to military superiority.

On this last count, U.S. Sen. Stuart Symington (D-Mo.), observed recently: "We figured they wouldn't have the (atom) bomb until 1953 and they had it in 1949. We didn't know they had hundreds of good MIG fighters at the start of the Korean war... To the best of my knowledge they have never said anything in a military weaponry way that they didn't

come through with on the basis of the way they put it."

Diversity of Viewpoints In spite of the diversity of viewpoints in the current debate on U.S. defense policy, there is general agreement that the arms race is, at its core, a scientific race. Even the question of arms control is basically a scientific question since effective control would depend on an effective detection and monitoring system.

East and West opened political negotiations in Geneva in October, 1958, on international agreement to ban nuclear weapons tests - a possible first step toward a general arms control agreement. The Scientists from East and West had previously agreed, in technical negotiations, that a test ban could be policed effectively by a global network of detection stations.

Meanwhile, however, U.S. Atomic Energy commission experiments with underground atomic explosions threw doubt on the whole technical issue. AEC officials argued that some tests might not be detected, or distinguished from natural phenomena like earthquakes. Later, new refinements in detection instruments reversed some of the doubts.

Whatever the outcome of the political talks in Geneva, experts point out that every aspect of the arms race is fundamentally technical in nature. Effective competition in modern weapons requires costly investments in research and development; effective agreement to halt the arms race requires the development of elaborate technical machinery to insure adherence to the treaty.

The scientist has not taken over in international politics, but he has clearly pulled his chair alongside the diplomat's.

The Economic Imperative On the peaceful side of constructing his future, man is also turning more and more to science for answers to his problems.

America's "affluent" society already owes a great debt to technological research and development. The diversity of

consumer products which jam America's shelves and fill America's homes is evidence of a flourishing technology. There is similar evidence in the progress of American medicine, agriculture, heavy industry, transportation and weaponry.

Contemporary research, much of it American, is opening up entirely new frontiers in solar and nuclear energy, communications, electronic brains, automation, etc.

Serious Challenges Yet, as the nation emerges from the 1957-58 recession, 5 million unemployed and a leveling off of national productivity suggest that the American economy faces some serious challenges. For domestic reasons alone, most economists agree, the United States must accelerate its rate of economic growth. Productivity and job opportunities must expand rapidly or income and living standards will inevitably suffer.

One of the most important elements of faster economic growth, these observers claim, is greater American investment in technological research and development.

The development of nuclear energy for peaceful purposes, for example, has progressed much faster in Britain (and perhaps the Soviet Union) than it has in this country. U.S. nuclear power plants are far from competitive with traditional power sources such as water and coal. Yet future economic growth in many water-short parts of the United States may depend on more rapid development of cheap power from nuclear sources.

Air Transportation U.S. progress in commercial jet air transportation is also, according to some critics, lagging behind British, French and Russian development. Yet these and other new industries are technology's contribution to an expanding economy.

Nor are domestic considerations the only pressure on an expanding American technology. On the military side, the cold war arms race obviously demands constant improvement in U.S. weaponry. And, according to some experts, it

demand a heavier investment in research and development than we are now making.

There is also the pressure to expand trade, markets and economic growth in the rest of the non-Communist world. Here again, experts point out, modern science and technology provide some of the most important tools.

Throughout the underdeveloped world the struggle for economic growth is frequently a struggle against disease, lack of power and water, lack of resources, lack of technical skills, etc. A flourishing American economy, based on an expanding technology, could well afford to invest in these basic problems of the underdeveloped areas, many economists believe. In doing so the United States would not only expand its foreign markets and insure sources of raw materials. It would also meet Communist economic and political sources of raw materials. It would also meet Communist economic and political competition head-on in strategic areas of the free world.

Technical Assistance Current U.S. aid and technical assistance programs are, of course, operating already in this fashion. The President's "atoms for peace" program is now functioning through the UN International Atomic Energy agency, and through a score of bilateral agreements. The U.S. government has al-

ready helped build atomic power reactors in Brazil, Spain and West Germany.

Critics of U.S. activities in this area argue only that such programs need to be accelerated-that the economic growth problems of these countries are so great, and the threat of Communist competition is so real, only faster U.S. action will do.

All these pressures, domestic and foreign, reduce themselves once again to the basic problem of a faster rate of growth for American technological research and development, and faster U.S. economic growth.

And, underlying the technological (or "practical") growth is an expansion of basic research - the quest for fundamental knowledge about the universe and all its forces. This is one of the most urgent of all priorities for the United States, according to Dr. James R. Killian, Jr., the President's Special Assistant for Science and Technology.

Basic Research Just 6 per cent of this country's total annual research and development expenditure (both government and private) is for basic research, Dr. Killian points out. He insists that only "aggressive audacity" in the search for fundamental knowledge will enable this country to maintain its present lead over the Soviet Union.

the world's first ranking industrial and technological society. According to a current argument, however, this lead is precarious. An explosive growth of American genius

and productivity may be the only guarantee that we maintain our lead at home and our influence abroad. One of the basic investments for this kind could well afford to invest in science, basic as well as applied, peaceful as well as military.

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Drummond Reports

(Walter Lippman is again traveling in Europe. Roscoe Drummond reports from Washington in his absence.)

MUST WE CONCEDE ON MISSILES?

Washington - Nearly every day there is news which shows that the Eisenhower administration is persuading neither the country nor the Congress, including some leading Republicans, that it is wise to cut down the size of the Army and Marines and, without even trying, to concede missile superiority to the Soviets.

This week the Senate Democratic leaders were unanimous in appealing to the President not to reduce the nation's military manpower in face of the Berlin crisis. And despite Mr. Eisenhower's repeated assurances that our present and prospective military strength is completely satisfactory, the Gallup poll reveals that more Americans feel that we are losing out to the Russians in the balance of military power than believe we are ahead.

One of two things will happen soon. Either Mr. Eisenhower will convince the public and Congress that it is safe to carry through his planned cuts in the Army and Marines and that the nation will be more secure by saving money on missiles, even if this means a 3-to-1 - or greater - Soviet lead in ICBMs during the next three or four years, than by spending it.

Or, Congress will vote to over-rule the President, as now seems likely, and authorize a larger defense budget.

THE country ought to weigh this decision with the understanding that there is complete honesty of opinion and purpose on both sides. The reason honest people come to different conclusions is that they give greater weight to different factors in the equation.

For example, the Joint Chiefs of Staff have jointly given their written endorsement to the proposition that our present deterrent power is sufficient for the nation's security. Isn't that conclusive? Not necessarily. There are reasons why it is not conclusive.

The fact is that each has now written to the Senate Armed Services committee setting out further steps which they believe each service needs to take to meet their military responsibilities.

There are two holes in the argument that our present military power is sufficient. One is that while our present

military strength may be sufficient to deter war, it may well not be sufficient to deter diplomatic blackmail - since ICBMs are politically powerful, as Khrushchev is so vividly demonstrating. The second hole in the argument is that the administration's defense critics are not primarily talking about present military security; they are talking about future military security because what we fail to do today in missile production will show up in missile weakness tomorrow.

DEFENSE Secretary McElroy has told Congress that the administration does not intend to match the Soviets missile for missile. This poses the central question: Is it psychologically wise, is it militarily prudent, is it financially necessary that the United States accept missile inferiority as a national policy for the next several years?

Here, again, there are honest differences of opinion. The Soviets riskfully cut down heavy-bomber production in order to speed long-range missile production. The administration proposes to riskfully hold down liquid-fuel missile production now in order to speed hard-fuel missile production later.

Question: Can we successfully lead the free world politically during the next three years if we concede this visible superiority to the Soviets - without even trying to match it - in the most threatening and destructive weapon of all?

Mr. Eisenhower has argued that we mustn't fall into the Soviet trap of spending ourselves into bankruptcy. But couldn't we fall into another Soviet trap by embracing their specious warning and refusing to spend?

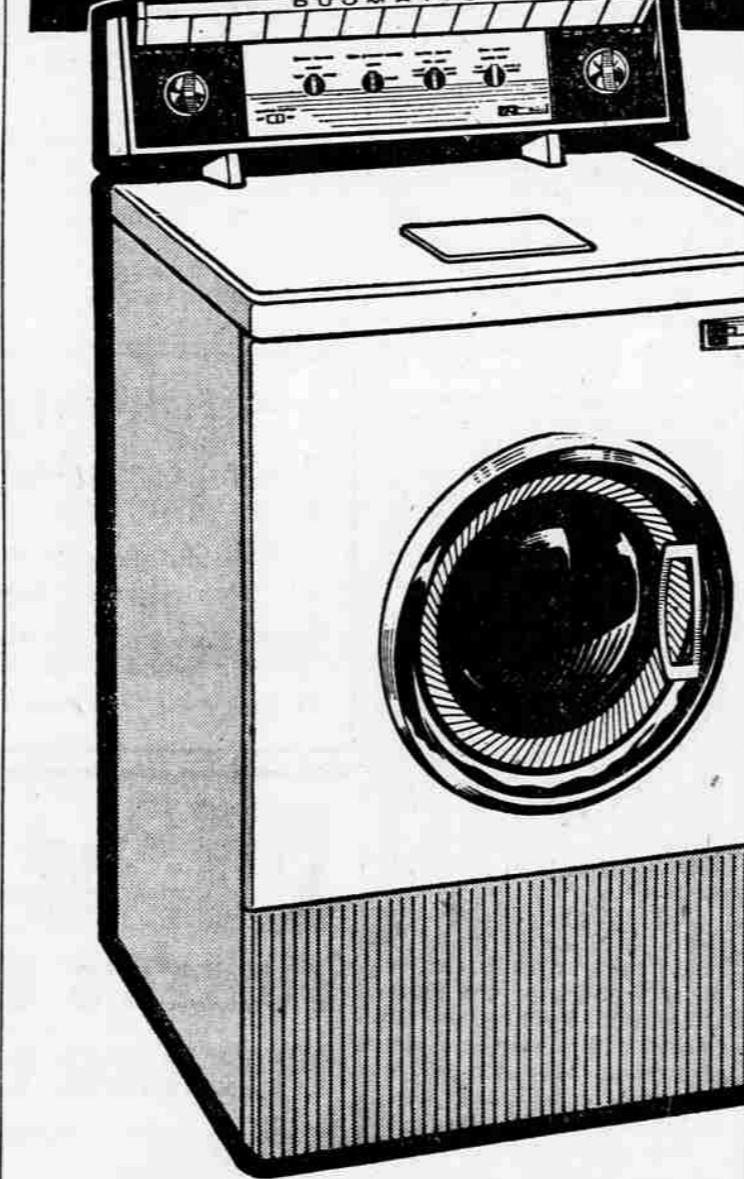
My instinct is to doubt whether more total defense spending is the only answer. I'd like to see the President invite Secretary McElroy to come up with a different balance of spending which would put more into missiles. And if that is impossible, I'd like to see the administration's Congressional critics prove how strongly they believe their own criticism by showing that enough economies can be made in the total budget to provide the \$700,000,000 a year which would be needed to begin to match the Soviets missile for missile.

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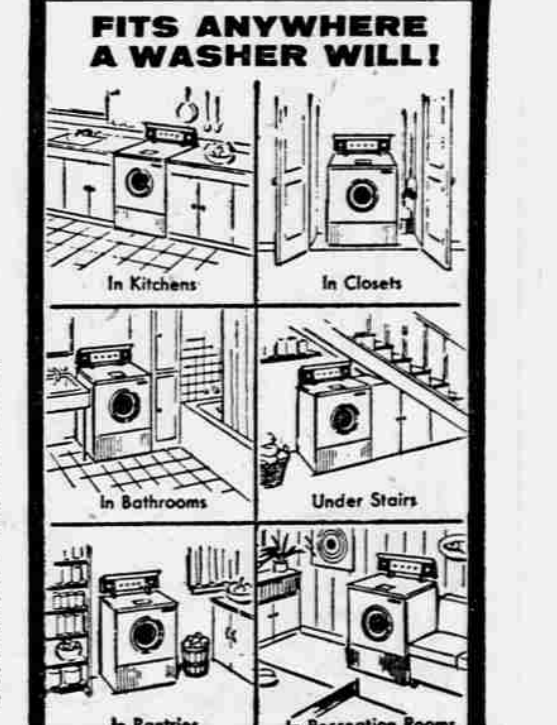
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