RESEARCH REPORTS

Reviews of new research by public agencies and private institutions

"The Universe: Finite or Infinite?"

Smithsonian Institution, Office of Public Affairs, Washington, D.C. 20560. 2pp.
Author: George Field

The universe is now expanding, apparently as the result of a giant explosion some 15 to 20 billion years ago. Will it continue to expand indefinitely, or stop expanding and collapse?

While some recent observations suggest that it will expand through all eternity, scientists at the Harvard-Smithsonian Center for Astrophysics are uncovering new evidence indicating that the universe will ultimately collapse.

The future of the universe and its spatial structure, writes Field, the Center's director, should be determined, according to Einstein's theory of relativity, by the amount of matter the universe contains. If that quantity is greater than a certain critical density (equal to three hydrogen atoms per cubic meter, on the average), space curves in on itself; thus, a finite universe. The gravitation exerted by that matter also should slow down and reverse the expansion. If less than the critical amount of matter is present, the universe is infinite and will keep expanding forever.

One way to estimate the amount of matter in the universe is to study the heavy hydrogen that exists in space. Another way is to measure the gravitational effects of one galaxy on another. But the suspicion is growing that additional matter exists undetected in intergalactic space. Hints of its presence may be found in the intense X-rays emitted from within clusters and "superclusters" of galaxies. Much of the "missing mass" needed to "close the universe" may be in the form of hot gas visible only in X-rays.

A series of X-ray–detecting satellites planned by the National Aeronautics and Space Administration has already begun the search for more evidence of this "missing mass." But there is no cause for immediate alarm, says Field. Even if the universe is destined to collapse back upon itself, astronomers estimate that this will not happen for at least another 80 billion years.

"Manpower for Military Mobilization"

American Enterprise Institute for Public Policy Research, 1150 17th St. N.W., Washington, D.C. 20036. 47 pp. $2.75
Author: Kenneth J. Coffey.

The first casualty of the 1973 decision to rely on an all-volunteer Army has been the strength and well-being of the Army's reserve forces—the National Guard and the Army Reserve.

Without prompt corrective action, says Coffey, a military manpower consultant to Congress and the Department of Defense, by 1980 more than a third of the reserve personnel needed to augment the active Army upon mobilization will simply not be available. The Army's reserve forces must sign up 170,000 recruits annually to maintain the numbers authorized by Congress. But the advent of the all-

volunteer force and the demise of the draft have sharply eroded incentives for joining the Army reserves.

Reconstituting the draft is politically unfeasible. Costly boosts in reserve pay and fringe benefits would not adequately solve the problem. One drastic solution (perhaps also politically unacceptable), says Coffey, would be for Congress to reinstitute a modified draft designed specifically to provide trained ready reservists. Inductees could be required to serve for only a brief training period (perhaps four months) and then be liable for recall, in the event of emergency, for the following eight-month period. The induction of 650,000 young people annually would not constitute universal military training but would assure a far greater degree of participation than occurred under earlier draft policies.

A large, trained reserve is critical to the Pentagon's mobilization policy, which calls for bringing all existing Army units to full strength immediately and increasing Army strength from 715,000 to 1,780,000 within 120 days. Newly trained conscripts and volunteers could be available for combat 150 days after mobilization, too late to provide the manpower the Army needs to bring its units up to full strength in the early days of a conflict.

Coffey questions whether a total of 1.78 million men and women would be required so quickly. He also questions whether the United States has the airlift and sealift capacity to transport rapidly the reinforcements and equipment required in case of a NATO–Warsaw Pact confrontation in Europe. It would be futile, Coffey says, "to spend great sums of money on incentives or to draft personnel to provide additional reinforcements who could not be quickly transported to the battlefields, or who, once there, could not be supported with the necessary amounts of food, ammunition and other supplies."

Management improvements and policy adjustments can ease the reserve problem, Coffey concludes, but to meet stated Army requirements we must either abandon the all-volunteer Army idea, adopt a special draft to maintain trained reservists, or spend billions of dollars for new recruiting incentives. If the voters reject all these alternatives, Coffey says, "they are allowing a corollary increase in the possibility of both armed conflict [in Europe] and the use of nuclear weapons."

"Emergent Nationality Problems in the U.S.S.R."

The Rand Corporation, Santa Monica, California 90406. 33 pp.
Author: Jeremy Azrael

Changes occurring in the ethnic mix of the Soviet population could pose serious challenges to the Kremlin. While these changes are unlikely to threaten the Soviet system, writes Azrael, a University of Chicago political scientist, they could generate considerable internal stress and hinder the further growth of Soviet power.

There is a great disparity between the low growth rates of the U.S.S.R.'s "European" (Slavic and Baltic) nationalities and the extremely high growth rates of its "non-European" (Caucasian and Central Asian) nationalities.

Because the Europeans form such a large majority of the population, overall Soviet population growth has slowed to slightly over 1.3 percent per annum, while the proportion of "non-Europeans" has risen from 11.5

percent in 1959 to an estimated 17 percent in 1977 and is steadily increasing. By the end of this century, 20 to 25 percent of the U.S.S.R.'s total population and almost 40 percent of its teenagers and young adults will be "non-Europeans."

By the late 1980s, there will be too few "European" entrants into the industrial work force to replace "European" retirees, let alone staff new plants and enterprises. Continued economic growth will depend on the regime's willingness and ability either to shift its industrial center of gravity eastward toward the semideveloped republics of Central Asia, or to mobilize the presently nonmigratory natives of those republics for work in other regions. Both alternatives involve large costs and the risk of serious national unrest.

Future manpower demands may also force the regime to reduce the size of its armed forces or fill the ranks with poorly educated Central Asians who have a weak command of spoken Russian.

These difficult decisions could lead the Kremlin to impose harsher restrictions on nationalist movements. They could also induce the U.S.S.R. to enter into balanced force reduction agreements, to curtail Soviet "globalism," and to adopt a lower profile in world affairs.

"An Inventory of Federal Income Transfer Programs"

The Institute for Socioeconomic Studies, Airport Rd., White Plains, N.Y. 10604.
219 pp. $12.00
Authors: William J. Lawrence and Stephen Leeds

Many welfare reform proposals would substitute a single, federally financed income support system for the existing welter of overlapping programs that often discourage the poor from seeking work. It has proved difficult, however, to rationalize the present national income-transfer system without an accurate inventory of what that system includes.

The 1977 *Budget of the United States Government* uses a narrow definition of "income security" programs to include retirement, disability and unemployment insurance benefits, and food assistance. This totals $137 billion, or 35 percent of the federal budget. A companion document, *Special Analyses, Budget of the United States Government*, adds some health, housing, and veterans' benefits to reach a total of more than $170 billion in direct expenditures.

This report from the Institute for Socioeconomic Studies uses a broader definition to identify 182 federal programs aimed at helping the needy. They account for $250 billion of the 1977 federal budget, or 69 cents out of every dollar collected by Washington in tax receipts. No overriding theme or theory unifies these programs, which provide any one of five types of benefits to support or supplement a person's current standard of living: direct cash payments (e.g., welfare, social security); tax relief through various reductions in personal income taxes; "in-kind" benefits that provide essential goods and services either free or at reduced prices (e.g., food stamps, Medicare); and credit and insurance at terms more favorable than those available in the private sector (e.g., student loans, flood insurance).

Some programs included here are not universally accepted as part of the federal income-transfer system.

Among them are disaster assistance in the form of low-interest loans to farmers, veterans' medical services, public-service employment, and economic development grants. But these account for only $7 billion, or less than 3 percent of the total inventory's outlays.

The five major components of the national social security system—retirement, survivors, and disability pensions, as well as Medicare hospital and medical benefits—represent 40 percent of the expenditures cited in the inventory. Tax relief accounts for $35 billion, or 14 percent. Only 23 percent of federal benefits (or about $55.5 billion) are distributed in whole or in part on the basis of *need*, and more than half of these benefits are dispensed in the form of in-kind goods and services.

"World Military and Social Expenditures 1977"

WMSE Publications, Box 1003, Leesburg, Va. 22075. 31 pp. $2.50
Author: Ruth Leger Sivard

Aggregate military spending throughout the world now tops $350 billion yearly and the backlog of orders for arms is two to three times the size of present deliveries. Sivard, formerly an economist with the Arms Control and Disarmament Agency, argues that this diversion of resources "impedes growth, fuels inflation, contributes to unemployment, and squanders resources in short supply." (The U.S. Defense Department in peacetime consumes half as much jet fuel as all U.S. commercial airlines combined.)

The disparity between the largesse devoted to "defense" and the funds

TEN MAJOR MILITARY POWERS & SOCIAL INDICATORS, 1974

	USA	USSR	West Germany	China	France	UK	Iran	Italy	Japan	Israel
Military Expenditures Billion US $	85.9	84.0	13.8	13.0	10.0	9.8	6.0	4.3	4.2	4.0
Rank among 138 countries in:										
GNP per capita	4	27	7	103	16	25	46	28	21	23
Literacy	1	1	1	24	1	14	82	29	1	36
Population per physician	17	1	9	91	23	25	67	10	33	2
Infant mortality per 1000 live births	18	33	22	49	9	12	106	25	3	24
Life expectancy at birth	18	27	18	53	9	9	82	9	5	9

Source: World Military and Social Expenditures 1977

devoted to other needs is growing wider. The world's budget for military research, for example, is more than six times the size of its budget for energy research. Industrialized nations investing heavily in arms often neglect their own social needs as well as those of the developing countries.

What could $17.5 billion (5 percent of the world's military budget) do to help correct the world's social ills? It could fund a vaccination program to protect all infants from common infectious diseases ($600 million). It could bring literacy programs to the one in four adults unable to read and write ($1.2 billion). It could provide supplementary food to the 200 million preschool children in Asia, Africa, and Latin America who are chronically hungry ($4 billion).

It could train health care aides, increase food production in the Third World, expand self-help housing programs for 300 million urban poor, provide supplementary feeding for 60 million malnourished pregnant or lactating women, and help build primary schools and hygienic water supply systems. Total cost: $11.7 billion.

"Vietnam, Consensus, and the Belief Systems of American Leaders"

Institute for Transnational Studies, University of Southern California, Los Angeles, Calif. 90007. 164 pp. $4.00
Authors: Ole R. Holsti and James M. Rosenau

An extensive poll of a broad range of American opinion leaders indicates that the Vietnam War shattered the post–World War II consensus on the nature of the international system and how the United States should pursue its foreign policy goals.

Deep and profound divisions exist among these leaders concerning how the lessons of Vietnam should guide the nation's future. These divisions reflect "several rather coherent, if almost mutually exclusive, belief systems" that go beyond views on Vietnam itself.

The 2,281 persons surveyed included men and women in politics, labor, the foreign service, the media, and the military, as well as a random sample of persons listed in *Who's Who in America*. While a majority diagnosed U.S. intervention in Vietnam as essentially a futile undertaking, there were sharp differences about why failure occurred.

Despite the divisions of opinion, there was substantial agreement on some issues. Political scientists Holsti and Rosenau found that two-thirds of those surveyed predicted that the outcome of the war would "encourage Communist nations to seek other triumphs."

More than three-fourths agreed that in any future foreign intervention, U.S. force should be applied quickly rather than through a policy of graduated escalation. And at least three-fifths expressed some measure of agreement that the war effort resulted in neglect of more serious, nonmilitary threats to national security, such as a loss of faith in the honesty of government or structural damage to the economy.

Supporters of the war (including the 15.9 percent of respondents who said they consistently backed the goal of military victory and the 5.6 percent who said they adopted that position

toward the end of the war) were more likely to attribute U.S. failure in Vietnam to political restrictions on the conduct of the war than to the basic nature of the undertaking. And they believe that the price of failure will be paid in the international arena.

Critics of the war (the 16.6 percent of respondents who early favored U.S. withdrawal and the 38 percent who adopted that view in the latter stages of the war) tended to trace the U.S. failure in Vietnam to unrealistic goals, lack of understanding of the history and culture of the region, the motivations of the adversary, and the shortcomings of the Saigon regime. They view the consequences of the war in terms of its domestic costs.

Respondents occupying the middle ground between the two extremes are also deeply divided in their convictions, the authors conclude. This suggests that the task of rebuilding a workable consensus in support of U.S. foreign policy will not be easy.

"UDIS: Deinstitutionalizing the Chronic Juvenile Offender"

American Institutes for Research, 1005 Thomas Jefferson St. N.W., Washington, D.C. 20007. 222 pp. $7.50 (Summary: 36 pp. $2.50)
Authors: Charles A. Murray, Doug Thomson, and Cindy B. Israel

Juveniles under the age of 18 commit roughly half of all serious crimes in the United States. But the problem of youth crime in America has long frustrated law enforcement officials who suspect that traditional methods of dealing with juvenile offenders may do more harm than good.

This report, prepared for the Illinois Law Enforcement Commission, concludes that getting serious delinquents off the street and into custody "has a powerful and apparently long-term inhibiting effect on subsequent delinquent activity."

Researchers studied 492 chronic male juvenile offenders from Cook County to determine which was more effective, incarceration in state training schools or an experimental Unified Delinquency Intervention Services (UDIS) program that provided counseling, vocational training, and other services to delinquents assigned to group homes, work camps, and other non-correctional institutions.

Both approaches produced a sharp drop in rearrest rates among the youths (down an average of 68 percent after their release) as well as a reduction in subsequent court appearances (down 64 percent) and violence-related offenses (down 74 percent).

Incarceration was slightly more effective than the experimental UDIS program, and the costs were similar. Of those assigned to UDIS, the *greatest* improvement was shown by juveniles taken from their communities and assigned to out-of-town programs such as work camps.

While researchers concluded that removing juvenile offenders from the community produced positive results, they found that the length of time spent in the UDIS program made little difference in their subsequent behavior. The results were the same if they remained for six months or one year.