

Geopolitics, Remote Frontiers and Outer Space

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Since the 1973 Arab-Israeli war and the subsequent oil embargo, concern over the supply of raw materials has had a growing impact upon international relations. For the first time since World War II, the security of overseas strategic resources and, more specifically, those that come from conflict regions in the less industrial world, is in question. This concern is based upon three related phenomena: the growing dependence of the advanced western economic powers upon the raw materials of the Middle East, Africa, Asia and Latin America; the relative autarky of the Soviet Union for *most* of these same resources; and the diminution of effective western military power coinciding with the growth of Soviet power projection capabilities within vital regions close to its borders. Oil from the Persian Gulf and minerals from Southern Africa are the most obvious examples of this problem. As a result, the need has arisen to protect the lines of communication from the sources of the materials to their destinations and to seek alternative supplies and substitutes.

Viewed in historical perspective, today's problems can be regarded as short-term; serious, perhaps even critical, but short-term nevertheless. For, if we can learn from history, such resource dependencies can be overcome provided there is political enlightenment. Over time, new sources of raw materials and the consequent new lines of communication can be established. New technologies can reduce existing dependencies upon particular materials and new political alignments may reduce the strategic vulnerability of existing sources.

As a result of these shifting parameters, the next hundred years will probably see the remaining remote regions of the world developed and populated. These include the Amazon basin, the eastern Soviet Union, the polar regions, and the deep oceans. There is also a strong possibility that within this time frame the industrialization of space will begin and the first space colonies will be established.

Historically, the exploitation of new frontiers has had a major impact upon the geopolitical perspectives of states and, therefore, upon national policies. The opening of the New World, the Cape route, and the American West are three classic examples of new frontiers which have changed the shape of international relations. Two sets of explanations emerge when examining the rationale behind the quest for new frontiers at a particular point in history: first,

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what might be termed small-group or "micro" explanations, and second, systemic or "macro" explanations. The first category would incorporate ideology and adventure, greed and price, luck and foresight, national interest and anarchy. Thus the Age of Discovery would be interpreted as the outgrowth of the renaissance spirit and the unique economic conditions of Europe in the fifteenth century. The second category of explanations would refer to the interaction of three basic variables: population dynamics, technology, and the demand for and supply of scarce resources. In light of these variables, the discovery of the New World may be interpreted as the inevitable result of growing population and rising demand in Europe, coupled with the development of new technologies — in his case, improved maritime technologies — which were initially exploited by the most imaginative and needy countries.

As with most historical events, both sets of explanations need to be understood to appreciate why and when certain developments occurred. It is not enough to use macro theories to explain the activities of Prince Henry the Navigator or Marco Polo or Christopher Columbus. The macro approach may tell us why it was inevitable that a European country would eventually discover and exploit the riches of the New World, but it will not tell us why Columbus sailed across the Atlantic in the second-to-last decade of the fifteenth century.

With this historical and theoretical framework in mind, one may speculate that the coming decades will witness a major expansion of activity in three arenas which have great relevance for U.S.-Soviet geopolitical relations: outer space, the oceans — including the Arctic basin — and the Eastern Soviet Union. The technology, infrastructure, and logistics for exploiting these frontiers are currently being developed. The Soviet Union intends to exploit its Siberian resources in the twenty-first century and, given the vast potential wealth of that region, this phenomenon has long-term implications for the United States. The completion of the Baikal-Amur Mainline Railroad (BAM) in the mid-1980s will radically change the economic and political importance of eastern Siberia. BAM is one of the most spectacular engineering feats of the twentieth century and will be highly relevant to Soviet strategic relations with China and to the role of the Soviet Union as a Pacific power. BAM will permit access to the oil, minerals, and timber of Siberia and will encourage the development of the coastal area of the Far Eastern Soviet Union. No resource base similar to Siberia is available to the United States on its continental territory despite still untapped riches in Alaska and the Rocky Mountain states.

In the arena of ocean technology and outer space, however, the United States has important advantages. If it is prepared to exploit them fully in the decades ahead, these advantages could alter the geopolitical map by the early twenty-first century and extend American power into new dimensions. It is argued, therefore, that the United States must stress the development of innovative technologies to exploit the seas and space if it is eventually to compete with the phenomenal resource base that the Soviet Union has within its own territory.

In the context of ocean engineering, the United States should accelerate its investments in oil, gas, and mineral exploration and retrieval, and should more fully exploit its extensive fishing areas. These pursuits should, of course, be carried out within the context of the emerging Law of the Seas which, although placing certain restrictions on unilateral U.S. activity in certain sea areas, guarantees the United States legal access to far-flung seaways and oceans. These waters will represent vital national security interests for the United States and its maritime allies in the decades to come.

Of yet greater strategic importance to the United States is the potential U.S. role in outer space. The first test flight of STS-1 — the space shuttle — is scheduled for 1981. Assuming that the planned sequence of operational missions can proceed, a new era in the exploration of outer space will have begun. Unlike the Apollo program during the 1960s, which reached a climax with the Moon landing in 1969 and was primarily a political venture to demonstrate American technological prowess vis-a-vis the Soviet Union, the overriding purpose of STS-1 is economic. If the system works — and there is always a possibility it may not given the backlog of problems it has had — it will enable cheaper, bulkier payloads to be put into low-earth orbit. The lower cost of certain categories of payload that will be possible with repetitive shuttle flights has far-reaching implications for both military and commercial activities in this medium. In the military sphere, the shuttle will permit the deployment and servicing of larger, more sophisticated satellites, which can perform a host of tasks including command, control and communications, navigations, reconnaissance, surveillance, electronic ferreting and eaves-dropping, and antisatellite operations. The impact of new space technologies on battlefield management and strategic warfare, including antiballistic missile defense, could have as significant an impact as the introduction of the telegraph and the wireless had on naval operations in earlier years. Real-time navigation and real-time reconnaissance will be possible and, while scenarios relating to U.S.-Soviet warfare suggest that the satellites do have problems due to their inherent vulnerability, the possibilities are great that outer space activities will assist the United States in strategic nuclear deterrence and aid U.S. allies in cases of regional and nonnuclear conflict. Thus new space technologies can most certainly help our military capabilities and can provide some counter to the terrestrial constraints on access mentioned previously.

Ultimately, the space shuttle will permit the construction of large battle stations in outer space. Whether this will result from breakthroughs in laser and particle-beam technology is still a matter of debate. Nevertheless, the idea that space will forever be a hostile environment for military operations needs to be carefully examined. There is no inherent reason why the United States should not be able to develop a superior military capability in space, especially if the technology is closely tied to economic activities in outer space.

In the commercial arena, the shuttle will produce immediate economic

results. Even conservative analysts point to the numerous advantages that will accrue as large satellites in orbit permit smaller receivers on earth. This shift in the art and relative size of space-based and earth-based systems will reduce the cost of a host of activities from instant communications to electronic mail. In sum, the information revolution on earth as a result of improvements in outer space technology should produce new economic benefits which include resource management, environmental control, and communications activity. More futuristic entrepreneurs talk about the development of large structures in space for production of pharmaceuticals, crystals, and possibly, in the distant future, solar-power satellites which could help end our dependence on foreign oil as a major energy source. Whichever perspective one takes, the horizons are limitless.

The need for a reemphasis of the space program is related to the inherent nature of competition between the United States and the Soviet Union, a competition that transcends the nuts and bolts of the arms race. Structural weaknesses and gross inefficiencies suggest to some that the Soviet Union is an insecure and backward state which cannot compete with Western capitalism over the long run. But the reality is that the Soviet Union, with its vast human and natural resources, is large and complex enough to execute any desired mission — at a certain price (provided, of course, that its leadership survives the very real economic plight that they may face in the 1980s). Their military buildup has been achieved through enormous sacrifice by the civilian sector. Yet it has succeeded in providing the Soviet forces with extremely modern weapons. Since the Soviet Union does not use the systems analysis approach to economic and social trade-offs, to talk of “waste” or “duplication” in the Soviet system is of little avail. Consider for example, the investment in capital and labor that is going into the BAM Railroad. According to Western reports, there has been a stupendous waste of effort on this scheme and millions of rubles have been squandered, but — and this is the point — the railroad will be completed and it will open up the Soviet Far East. A hundred years from now will anyone really care about the initial capital costs? The Suez Canal and the Panama Canal were not built by cost accountants but visionaries who saw the tremendous geopolitical importance that these engineering feats would have upon the course of world history.

A concerted U.S. space effort would fire the imagination of a new generation of Americans who have the energy and scientific talents that need to be tapped. It would give the country a national goal at a time when the absence of such goals is very apparent and when there is great confusion about America's future role in the world. In short, the United States needs to regain its sense of destiny. If this sounds imperial and guilt-free so be it; for if the last twenty years have taught us anything, it is that we still live in a highly competitive international environment. Therefore, though the benefits of cooperation are ob-