

HOW THE MARS MOVEMENT COULD ACHIEVE SOLAR SYSTEM EXPLORATION: A MATHEMATICAL AND STRUCTURAL CONCEPTUALIZATION

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ABSTRACT

Taking a macrosociological viewpoint, the author demonstrates how the Mars Society could provide the impetus for a combinatorial and structural series of events that could lead to solar system exploration and a multi-world economy. These events can be categorized by six tiers.

- Tier 1. The individuals who comprise the Society are international and interact across national boundaries and agencies both public and private. This is the transnational basis of the Mars agenda.
- Tier 2. From among the individuals of the Society emerge interlocking teams devoted to the pursuit of the Society's political and/or technological goals which “step-to” Mars exploration and habitation.
- Tier 3. Networks and trade relationships develop among individuals and teams, generating capital.
- Tier 4. Tier 3 agents searching for specific resources establish consortia.
- Tier 5. Consortia organize resources and logistics to accomplish missions and settlement of Mars, the moon, and platforms in low-Earth orbit.
- Tier 6. A multi-world economy emerges which sets the stage for exploitation of outer solar system locales.

KEYWORDS: Solar System Exploration; Multi-world Economy; Transnational; Interlocking Teams; Consortia.

INTRODUCTION

Macrosociological thinkers Daniel Bell and Alain Touraine called the times we are living in the *post-industrial society*.^{1, 2} In 1976, Bell forecast the Information Age and how it would change the social structure to mold a world which would rely upon the economics of information rather than the economics of goods. The new society would not displace the old one, but rather intermingle with it in profound ways much as industrialization coexists with the agrarian sectors in our society today. The post-industrial world would include the emergence of a “knowledge class”, a change from goods to services, and changes in the role of women. These would be based upon an increasing dependence on science as a means of innovation; a means of technical and social change. Patrick Nolan and Gerhard Lenski see it somewhat differently. For them,

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this Information Age is the fourth phase of the Industrial Revolution, characterized by rapid advancements and global diffusion of technology.³ Peter Drucker sees it as a post-capitalist society where the inability of nation-states alone to address world-challenging issues is leading to the establishment of transnational organizations.⁴

THE TRANSNATIONAL INSTITUTION

Drucker says that the first real precedent of a transnational organization was the 1990 coalition against Iraq's invasion of Kuwait (Drucker, p. 9). This event set the common interest of the world community against terrorism ahead of national sentiments and interests. Foreshadowing this was the 19th century treaties which stamped out the slave trade and piracy on the high seas. There is a growing need for transnational institutions.

Examples of transnationalization are to be seen in many of the pressing issues current in the news today. *Money* is no longer controlled by national states, not even by them acting together. All *information* is nearly accessible by anyone on the face of the planet. Control of money might be attempted by the establishment of central banks and common currencies, but information is insidious and pervasive. Money becoming a transnational institution has outflanked the nation-state by nullifying national economic policy. Information becoming transnational has outflanked the nation-state by destroying the link between national identity and cultural identity. In his examination of *arms control*, Drucker writes, "Unless arms control becomes transnational, it cannot be exercised at all -- which would make global conflict practically inevitable" even if major powers managed to avoid a hot war among themselves (pp. 139-140). *Terrorism* has become unmanageable by national states with private armies having proven counterproductive as a tool of national policy. Stemming terrorism and arms control are becoming more and more United Nations activities. Similarly, the *enforcement of human rights* has come under the United Nations and NATO, a trigger being the inundation of prosperous countries with refugees escaping various kinds of persecutions, as Drucker predicted. All encompassing has been the problem of the *environment* with numerous threats being to the habitat upon which all of humanity depends. We have taken transnational steps to prevent global warming; to protect oceanic resources; and to protect Antarctica.

The transnational organization is characterized by:

1. In its own sphere, transcending the nation-state by setting the common interest of the world community ahead of national sentiments and interests;
2. Establishing a sovereignty of its own, recognized by nation-states, and directly controlling citizens and organizations within the nation-state.
3. Addressing challenges that cannot be tackled within the borders of a national state.

Its avenues are in the emergence of the processes whereby nation-states began to share power with other organs, other institutions, and other policymakers. Major catastrophes might

hasten the speed in which they arise. *Limitation of national sovereignty* will be a central issue in decades to come.

THE PROBLEM OF SOLAR SYSTEM EXPLORATION

As has been outlined many times, the survival of the human species depends on expansion into the solar system: to gain the experience of living and working indefinitely in extraterrestrial environments and to locate a breeding population off-planet, among other specific reasons. The United States possesses the resources and knowledge base to foot the first critical steps of the expansion, but has, at least two times, let the opportunity pass: 1) when Congress cut the legs out from under a sustained lunar program and the von Braun Mars plan and 2) when the Space Exploration Initiative (SEI) was dismissed out of hand from “sticker shock.”

It is in the common interest of the world community to expand into the solar system. However, it does not seem likely that the United States, the most powerful nation-state on Earth, will be able to transcend its forces of “political drag” to accomplish this. What is needed is a transnational organization that can acquire the expertise and resources to undertake long-duration space research and missions; to command sovereignty; and thus address the challenge of solar system expansion. Ironically, the organization which might grow into such a transnational institution is one which was primarily established to advocate that the United States take up the banner of Mars exploration and settlement: the Mars Society.

THE MARS SOCIETY AS PROGENITOR OF A SOLAR SYSTEM EXPLORATION TRANSNATIONAL ORGANIZATION

The Mars Movement began following the *Viking* missions. During the fall semester of 1976, a group of Colorado University-Boulder students had a meeting. This led to a Spring 1977 class, which in turn led to a 1981 conference, the first “Case for Mars” meeting and the emergence of the Mars Underground as the students and their associates were called. There were five subsequent meetings over the years until August 1998, when the Underground formally became the Mars Society under the leadership of Dr. Robert Zubrin. The formal convention of the Society followed the publication of Zubrin’s popular book *The Case for Mars: the Plan to Settle the Red Planet and Why We Must*.⁵

The founding convention saw the arrival of representatives from over 40 countries and nearly every major laboratory, scientific agency, and academic department in the world. The Society’s mission soon took a three-pronged approach: 1) broad public outreach to instill the vision of pioneering Mars; 2) support of ever more aggressive government funded Mars exploration programs around the world; and 3) conducting Mars exploration on a private basis. What can be forecast from this start through the lenses of the combinatorial and structural vision of the macrosociological thinker? The Society could trigger a process of socially interacting forms, which can be described as a pyramid constructed of six tiers.

Tier 1. The individuals who comprise the Society are international and interact across national boundaries and agencies both public and private. This is the transnational basis of the Mars agenda.

There is a large population in this tier, probably on the order of several thousand interested persons among whom are actually dues-paying members, among whom, in turn, contain a subset of active members who do the work of the Society. This subset contains a few hundred members at the most.

Tier 2. From among these individuals in the Society, along with those they are affiliated with in their professions, are emerging *interlocking teams* devoted to the pursuit of the Society's political and/or technological goals which "step-to" Mars exploration and habitation. Examples of these are already in existence: the interlocking teams emerging to do the componentized work of the Mars Arctic Research Station (M.A.R.S.), the Mars mission rehearsal facility being constructed on Devon Island in the Eastern Arctic under sponsorship of the Mars Society; and the autonomous non-profit Red Planet Research group composed of Mars Society and non-Society members from various agencies that has a number of Mars-related technical projects underway. Also associated is a very active group operating out of the Stanford University Engineering Department. Persons active originally in one of these groups are now active in one or two of the others. This is leading directly to the next tier of operations.

Tier 3. Networks and trade relationships develop among individuals and teams, generating capital.

Although in an early formational stage, networks have already been established among Tier 2 actors in the areas of Russian technology transfer and a multinational/multiagency unmanned space mission which are expected to generate substantial capital. A number of smaller efforts have already begun to generate capital.

Tier 4. Tier 4 will form when Tier 3 agents searching for specific resources establish consortia.

It is at the level of consortia that the Mars Movement begins to approximate a transnational organization that can command a certain degree of sovereignty over citizens and organizations within nation-states. Consortial actors need not to have been started solely from Tiers 1-3.

Tier 5. Interacting consortia organize resources and logistics to accomplish missions and settlement of Mars, the moon, and platforms in low-Earth orbit.

An example of such interacting consortia might be a number of non-profit space-related organizations acting under one set of overarching goals combined with a commercial space consortium of different companies devoted to providing the technical features to accomplish the goals of the former.

Tier 6. A multi-world economy emerges which sets the stage for exploitation of outer solar system locales.

Once permanent settlements are enacted on Mars, the moon, and a number of space platforms, humans are not just a multi-planet species, but have set the stage for a multi-world economy, where markets interact from among the different human loci. The multi-world economy will drive the exploitation of outer solar system locales.

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