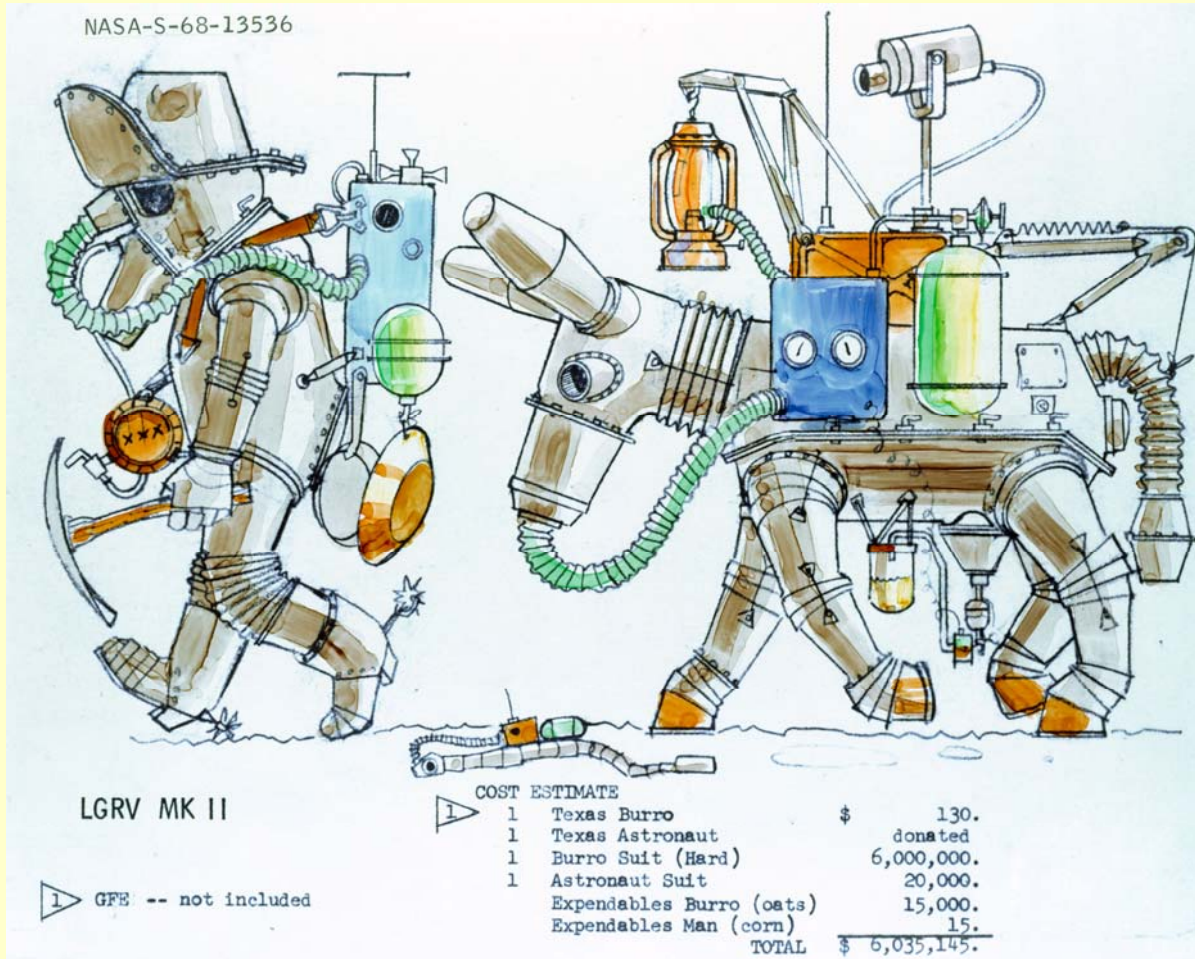


Towards a Theory of “Space Power”

James Oberg

June 2005

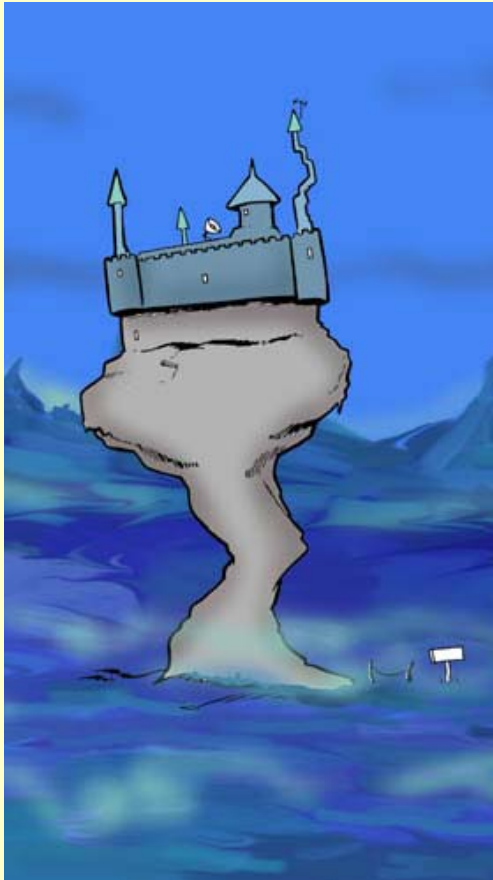
What we take with us into space....



Checklist:

- Air
 - Water
 - Food
 - Shelter
 - Sensors
 - Weapons
-
- *Experience*
 - *Thought Patterns*
 - *Metaphors*

Earthside metaphor: “Space is the New High Ground”



By comparing space to some theme out of earthside history, we force analogies, shut off possible insights, and conjure up false implications – and the result can be bad choices and policies.



Is the metaphor helpful or harmful?

- On Earth, HG is hard to reach and build on.
- On Earth, HG already has physical resources for shielding and hiding.
- On Earth, HG is a “castle on a peak”, a fort on a rock – a symbol of power.
- On Earth, HG provides a view of all below while concealing the viewer.
- In space, HG is extremely hard to occupy and build at.
- In space, HG has zero physical resources.
- In space, anything at the HG is a thin-skinned target with a bull’s-eye on its hull.
- In space, what’s at the HG is visible over vast distances, while ground players can hide.

Continued...

Is the metaphor helpful or harmful?

Continued

- On Earth, from HG one can strike anywhere while those below are limited in reaching you.
- On Earth, HG weapons are more effective when aimed downward.
- On Earth, attacking uphill adds difficulty and delay.
- On Earth, HG permanently controls strategic routes and territories, and can interdict any traffic.
- In space, attacks from HG follow predictable paths and timing; ground attacks are highly variable.
- In space, HG may be a much easier target.
- In space, HG is much harder to resupply, and up/downhill durations are very similar.
- In space, HG is a slip-sliding Maginot Line, easily avoided, outwaited, and circumvented.

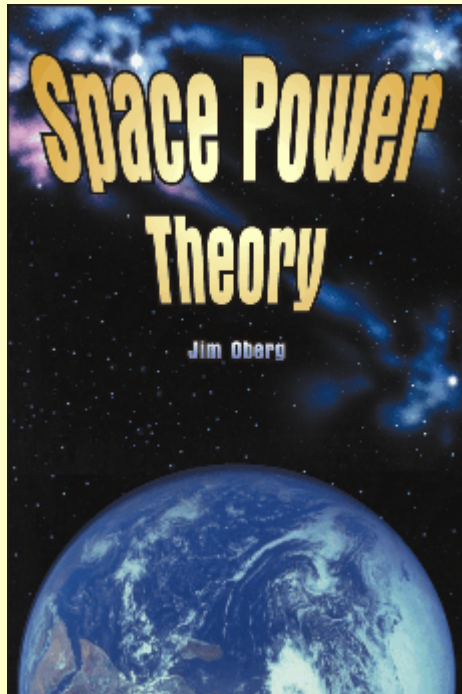
Are there more accurate metaphors?

Is an outpost in space really that LIKE a castle on 'High Ground' back on Earth....



Or does its obvious position & potential vulnerability really deserve a different earthside analogy?

U.S. Space Command's Project



US Government
Printing Office,
1999 (never sold)



General Howell
Estes (top), Admiral
Lyle Bien (below)



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Howell Estes on ‘Space Power Theory’

- Early in my tour as the CinC of the US Space Command, we often discussed the need for a national philosophy or strategic theory about space. There was an obvious vacuum of written theory concerning space that had long since been filled for land, sea, and airpower. Even though the US has been involved in space for 50 years, space theory and, therefore **policy and doctrine remain underdeveloped and somewhat disjointed**. I believe the lack of theory and policy is having a negative effect on the maturing of space power and the perception of its importance by people in the world’s spacefaring nations. . . **There is no framework, no theoretical basis** within which the issues can be intelligently addressed.

Oberg's Corollary to Estes's Charter

Without a mature 'theory of space power' to provide a quantitative measure of 'goodness' of policy, contesting options are championed and chosen based on ego, instinct, aesthetics, sex appeal, short-term political gain, misperceived historical analogies, protection of past investments, external requirements, whim and whimsy -- and even by default or randomly. From time to time the choices turn out to be correct, but we need to improve the odds.

The Book Project

- Extensive interviews and literature search by William Powell (Col., USMC), Paul Bailey, Richard Affeld, and others
- Book plan and preliminary text by Brian Sullivan
- Oberg called in in 1998 to rewrite and fill-in gaps
- Distribution throughout DoD in 1999
- Major utilization in military education programs
- Text originally on US Space Command home page (now lost -- only at www.jamesoberg.com)

What good is a reliable 'theory of space power'?

- Provides a foundation of appreciation of the unique nature of 'space' to allow formulation of innovative exploitation strategies
- Protects theoreticians and decision makers from false analogies with earthside experience
- By defining the limits -- or lack of limits -- of space-based capabilities, minimizes possibility of blindsiding by more creative and innovative rivals
- Provides reliable and usable criteria by which competing strategies can be evaluated, selected, modified when needed, modulated as required, abandoned when original assumptions change

Barriers to good ‘space power theory’

Confusing ‘ends’ and ‘means’

Ambiguous and self-defining terms

Intellectual inertia

Misleading maps, models, metaphors

Not what you don’t know, but “what
you DO know what ain’t so”

**Lack of appreciation that one is
needed and is still missing**

RAND (1998):

“Space-related national security objectives”

- Preserving freedom of, access to, and use of space
- Maintaining the US economic, political, military, and technological position
- Deterring/defeating threats to US interests
- Preventing the spread of weapons of mass destruction to space
- Enhancing global partnerships with other spacefaring nations

JEO: Definitions based on undefined terms or using conditions of unmeasurable utility are not helpful.

Past Theories of ‘Power’



Clausewitz,
Mahan, Mitchell,
and others tried
to develop ‘theory’



The “myth of theory” is that they created a
‘secret formula’ for success to be followed

(by the way....)
“Power” isn’t all “Force”

Get your way most of the time

Set the agenda for activity in chosen arenas

Don’t get hurt or startled

Get first dibs at the goodies

Dominate the consensus

Reward and punish other players

Don’t depend on others for rewards

Unclear Thinking Hinders ‘Best’ Choice

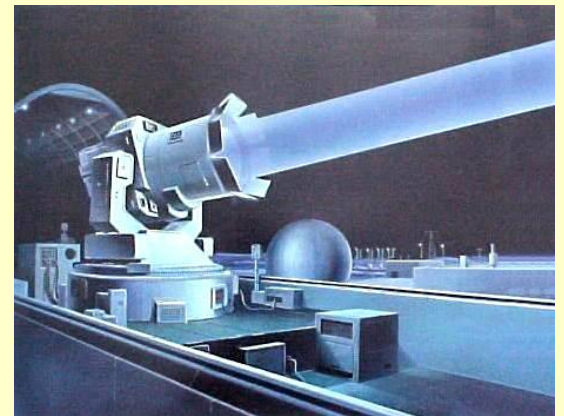
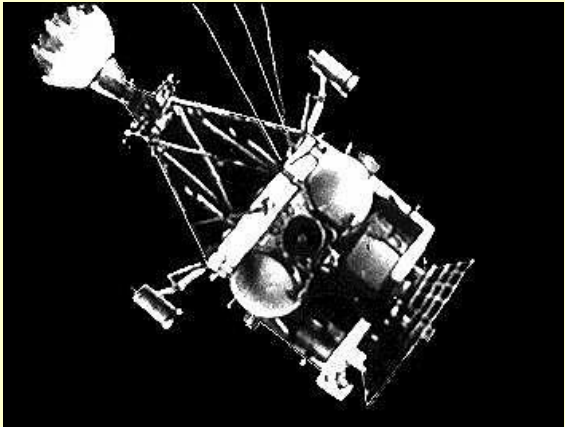
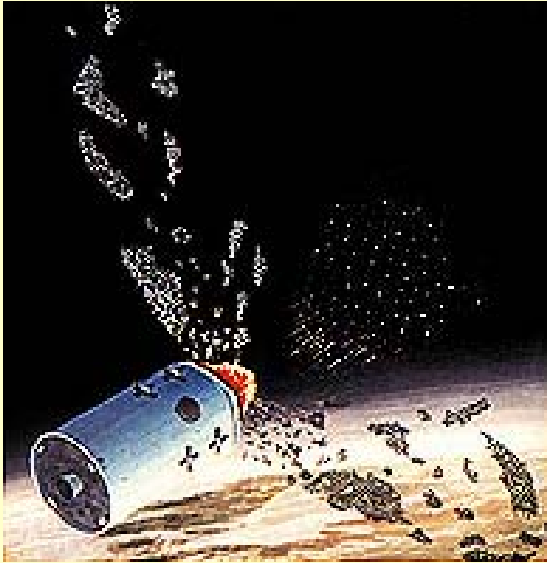
Example: Theological Anti-Weaponization

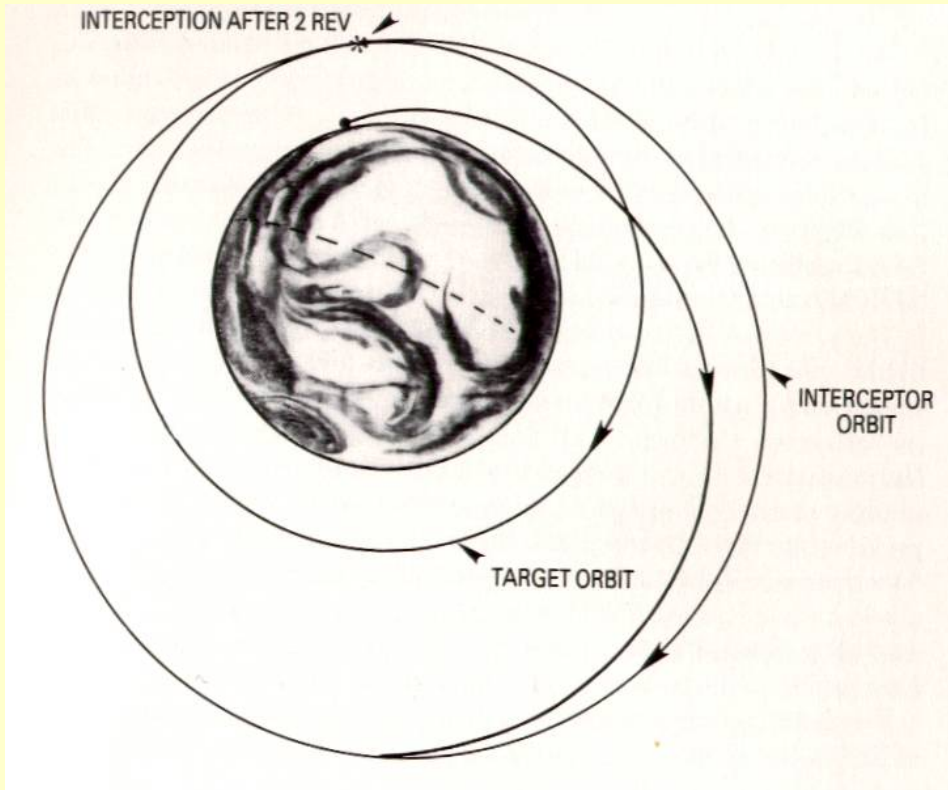
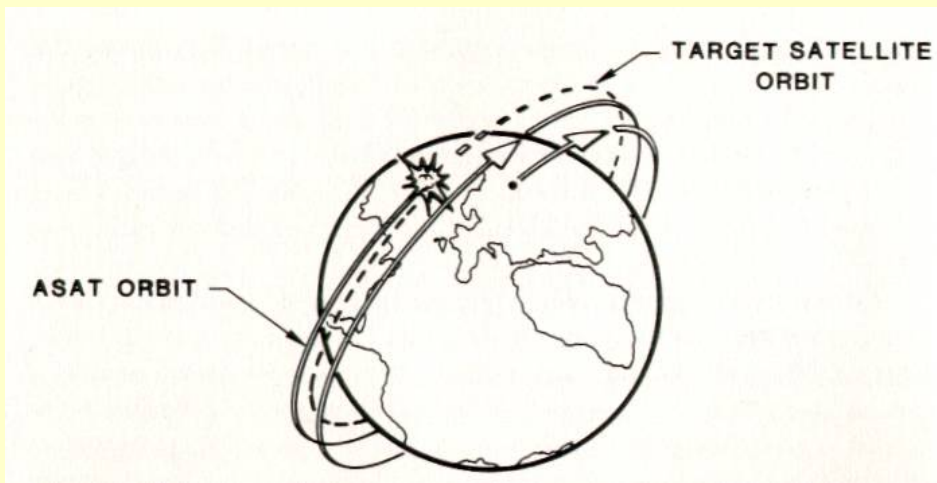
Example: Orbital Esoterica

Example: Descriptive Obfuscation

Attacks on Satellites

We own most of the targets -- we are the last ones to want anyone to start breaking things in outer space. For the U.S., 'status quo' is heaven.





Space-to-Space Combat -- already practiced in LEO

Fundamental feature of a space-to-space combat system: its range is limited only by booster power.

ASATs beyond LEO



Old Soviet ASAT (above) had limited lifetime and propulsion – but a typical space-to-space attack (below) depends only loosely on actual altitude & time.

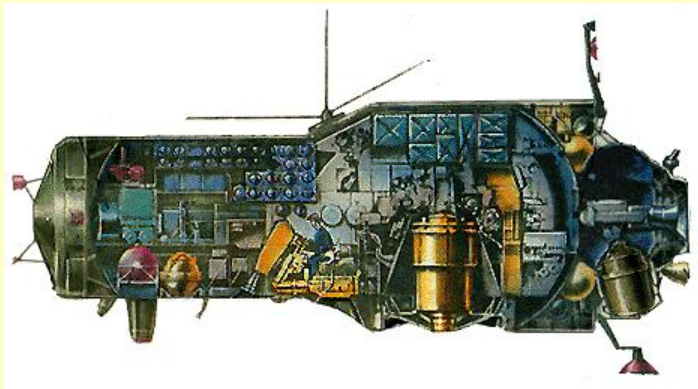


Commercial upper stage 'Briz' (above) is said to be derived from hardware built as an any-altitude ASAT, and has lifetime and propulsion to be quickly converted back.

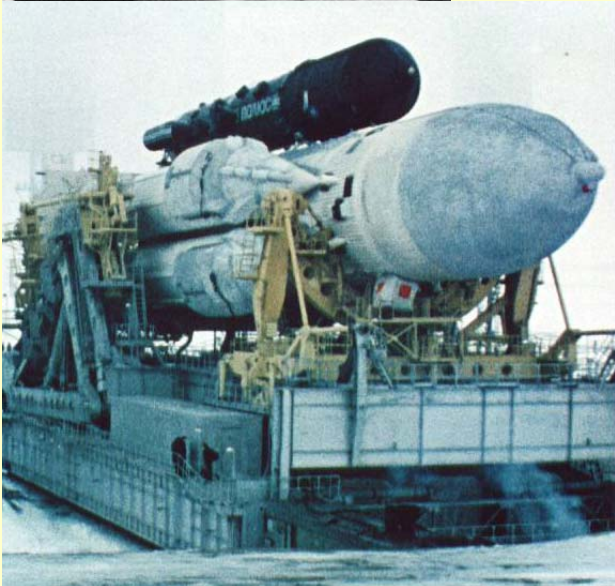
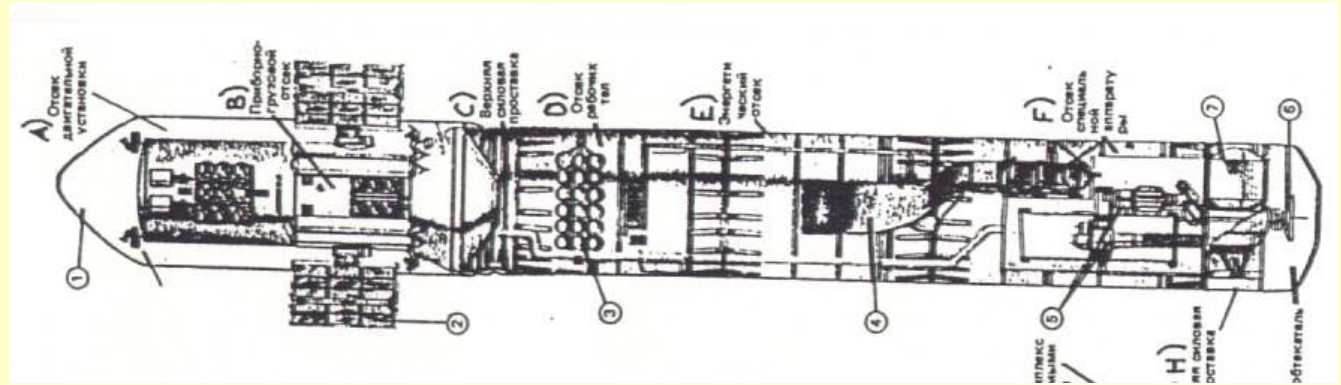
An armed space station in 1974



Nudelma air-to-air cannon (top) had been secretly installed on Soviet Salyut-3 manned space station (bottom left) to protect spy camera film (bottom right).

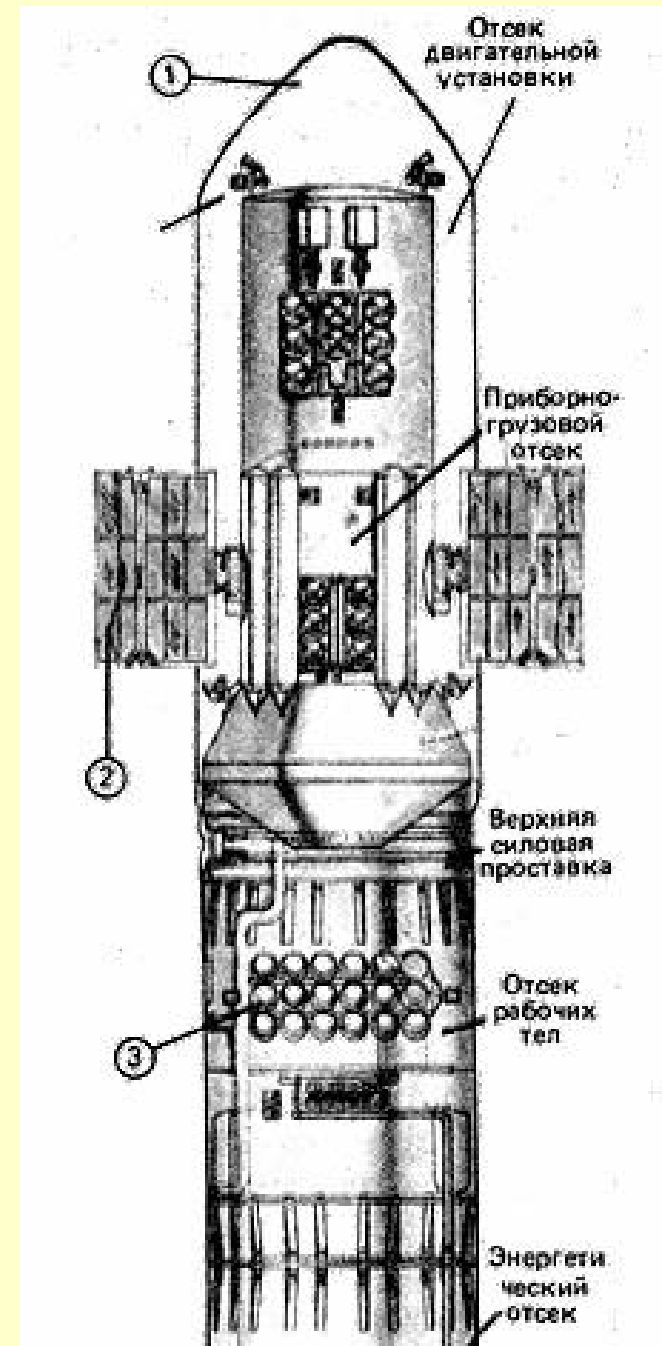
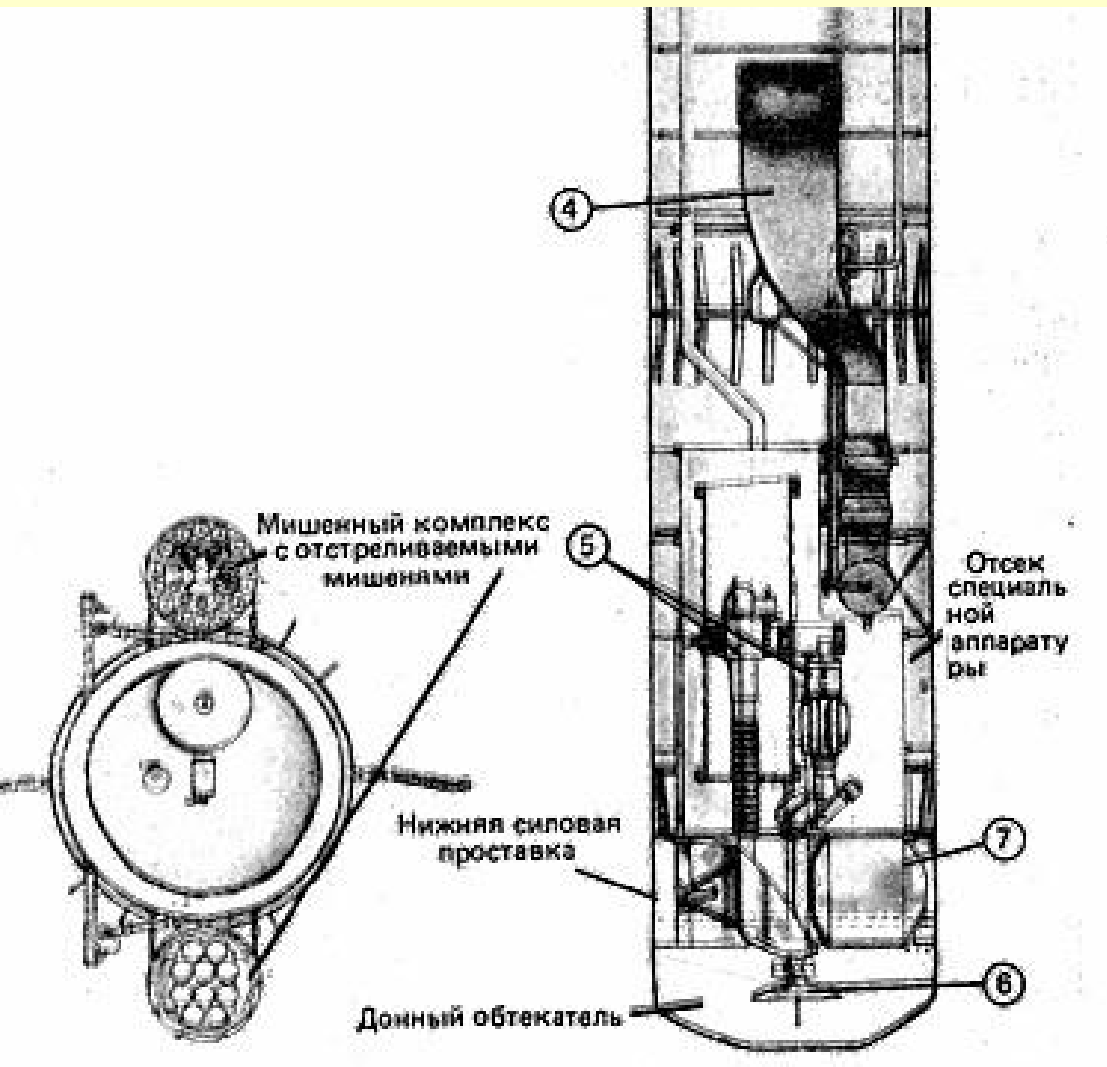


And the 'Space Battle Star'



First launch of 'Energia' super-booster in 1987 carried 100-ton black cylinder, the POLYUS 'space battle star' with the SKIF particle-beam prototype. Gorbachev came to watch the launch, and only then was told about the nature of the payload. Furious at the sabotage of his 'anti-Star-Wars' policy, he ordered the payload never to be turned on in orbit. It fell into the eastern Pacific.

Polyus systems



The Russian gun on the ISS



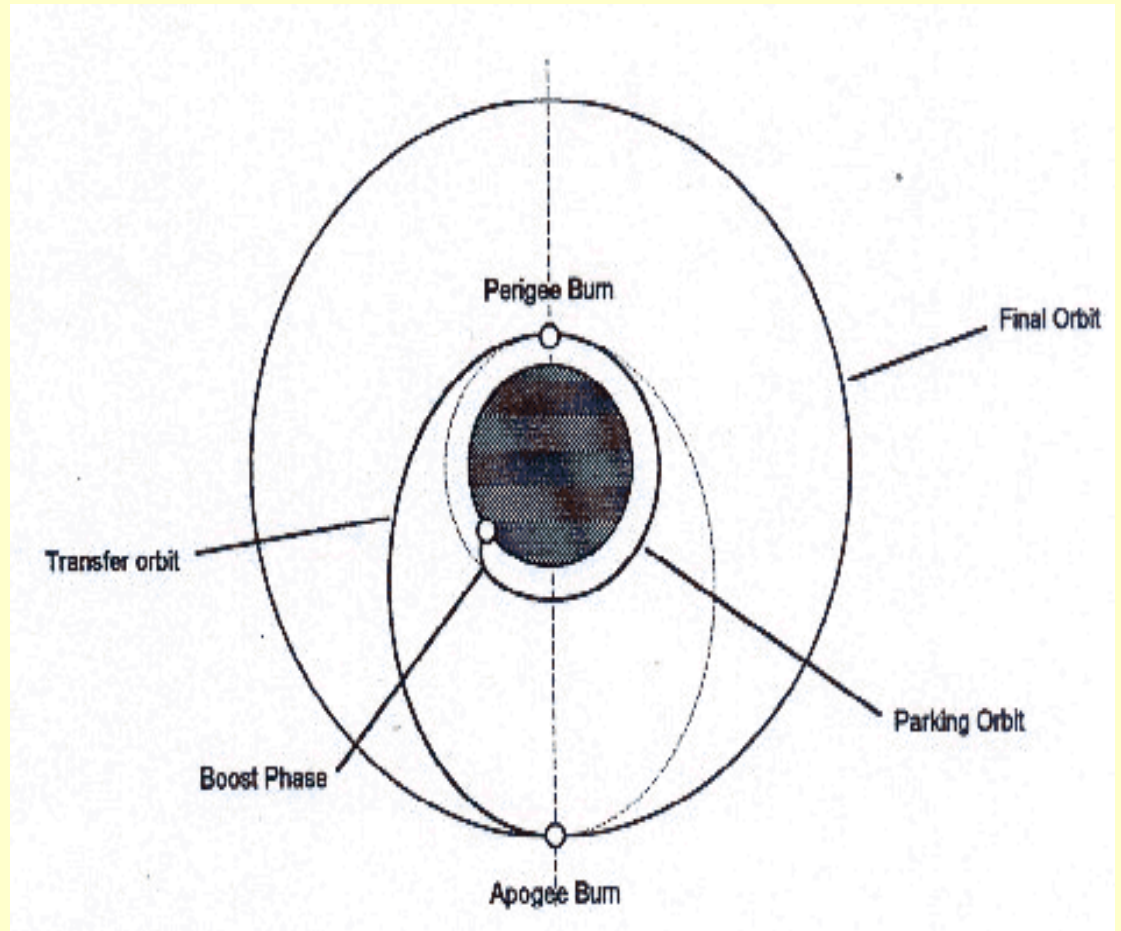
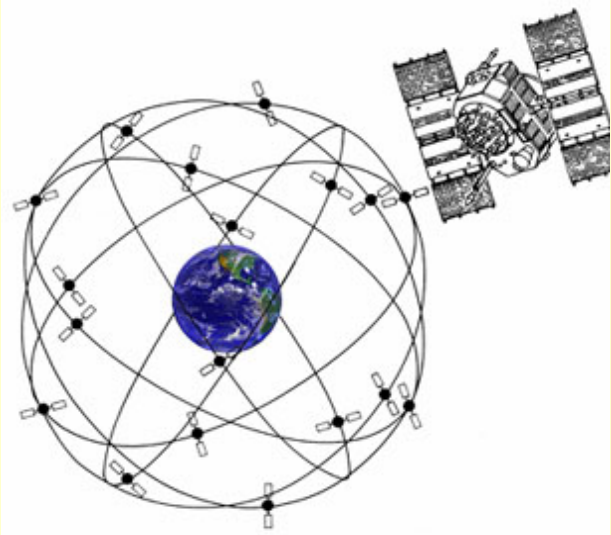
Part of the Soyuz survival kit -- but owned by Russia.



Unearthliness of space: ‘Orbitology’

- Robert Heinlein: “Once you’re in orbit, you’re halfway to anywhere.”
- Gravity rules; thrusting tweaks
- Velocity, more than position, dictates status
- ‘Territory’ and ‘Boundary’ are useless concepts
- Predictability of varying future positions relative to earth surface locations is usually high
- Potentially very high closing rates with no natural barriers to matter and energy
- Physical closeness of two objects no measure of ease of link-up
- Physical separation of two objects no measure of inability to interact

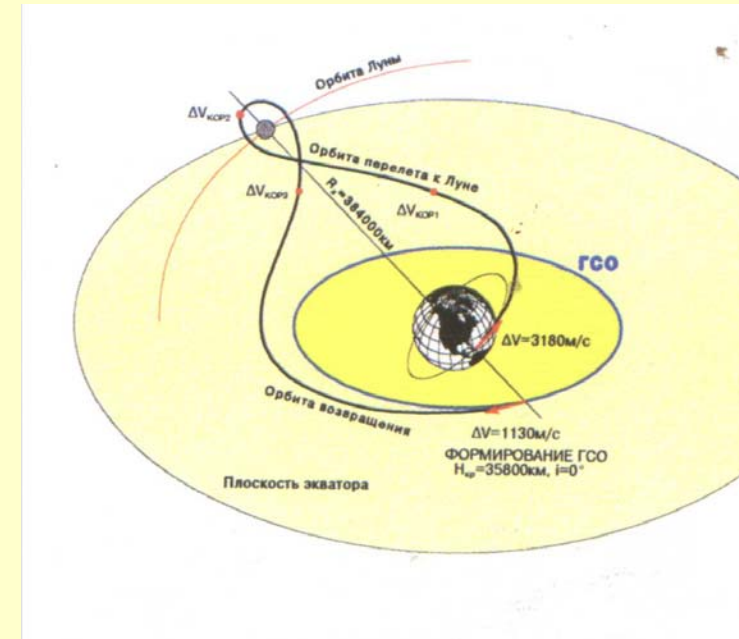
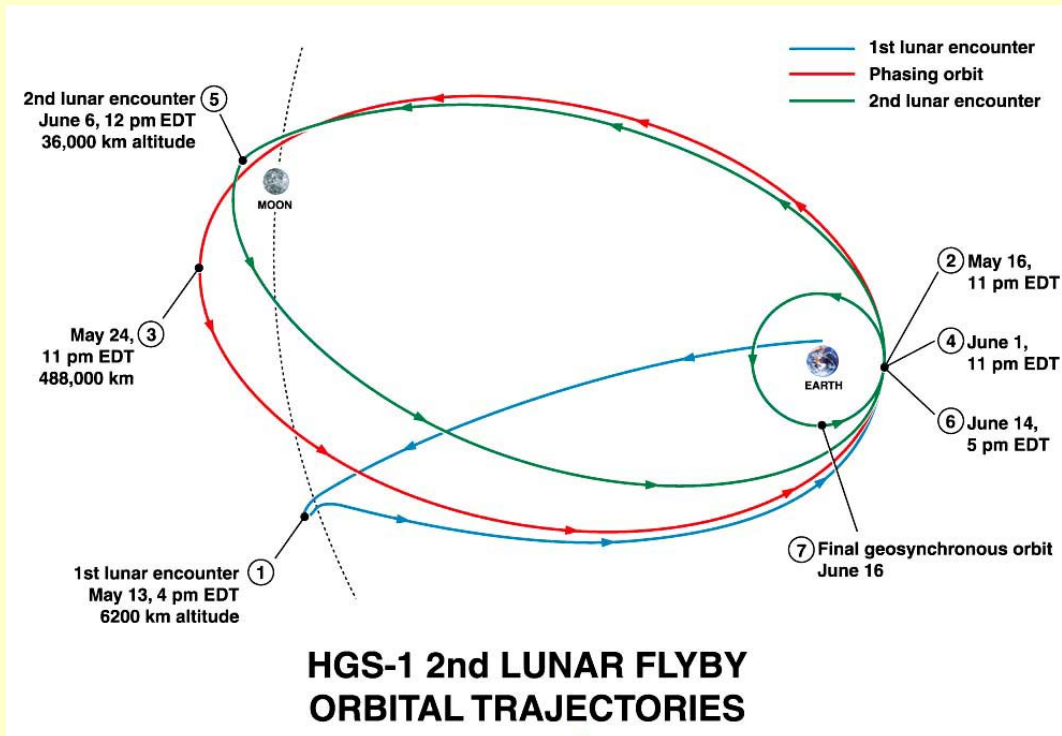
High-orbit invulnerability -- a dangerous delusion



It's hard to get to
these orbits -- and
that hardness is seen
as their best defense

Finding the hidden path....

(from Thermopoli to Blitzkrieg,
to Desert Storm -- hit 'em from behind)



.... and imagine where ELSE that kind of path can lead

(Un)reliability of Treaty Constraints

- Lack of agreement, or hidden disagreement, over basic definitions -- e.g., ‘space’, ‘in orbit’
- Breathtaking rapidity of technological turnover, both real, potential, and imagined
- Asymmetrical vulnerabilities and values
- Shifts in cast of players and in their own goals

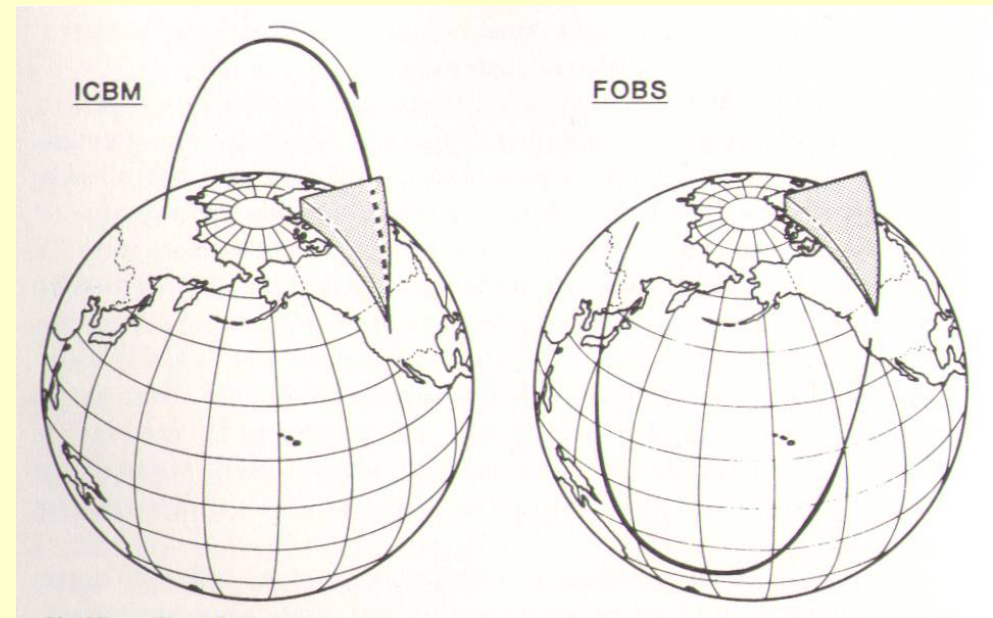
Enforceability Issues

- The *1975 Registration Convention* (formally entitled “Convention on the Registration of Objects Launched into Outer Space” establishes a mandatory and uniform registration system for objects launched into outer space. Three reasons have been posited for the establishment of a space object register: effective management of traffic, enforcement of safety standards and imputation of liability for damage. The *Registration Convention* requires mandatory reporting to the United Nations Secretary-General of information on a number of data, such as the date and location of the launch, basic orbital parameters after launch and the recovery date of the spacecraft. An on-line version of the registry is accessible through the United Nations Office for Outer Space Affairs.

The Fractional Orbit Bombardment System - FOBS

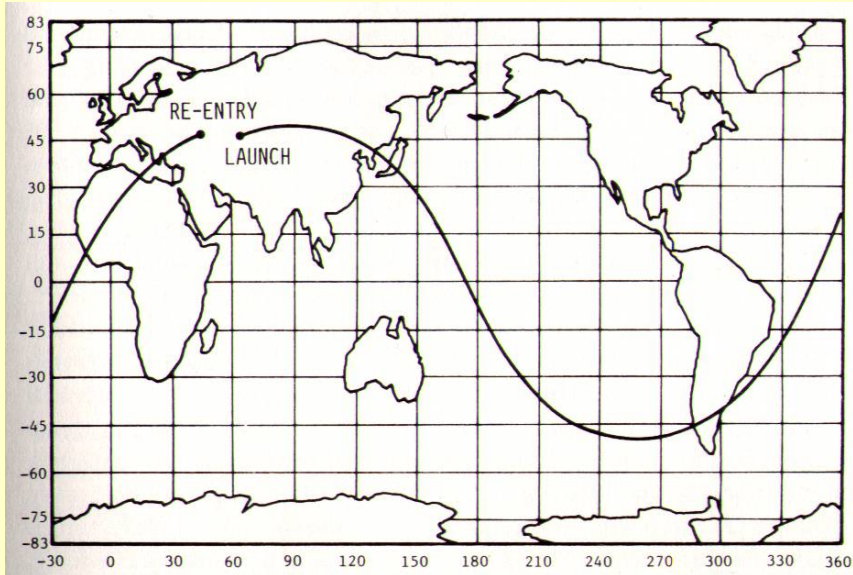


USSR deployed about 20 missiles with 'orbital warheads' -- despite treaty outlawing WMD in orbit



Was the FOBS Ever “In Orbit”?

SecDef McNamara’s team argued objects weren’t ‘in orbit’ because they never completed a full orbit



Then neither did Gagarin, ‘first man to orbit Earth’

Confused, Baffled and Bewildered?

A recipe for recovery.....

“It ain’t what you don’t know what’ll make you look like a fool – it’s what you DO know what ain’t so” – Will Rogers, 1933

- Being a “space expert” is not a prerequisite for making sound space-related choices
- Realizing how ‘unearthly’ space is, and how misleading earthside analogies can be, IS.
- Just “knowing the rules” is not enough by itself to anticipate all permutations.
- Jules Verne: “What one man can imagine, another man can do” – and probably WILL. So unchain and develop your imagination.

Chapter 5: “A Theory of Space Power”

- The primary attribute of current space systems lies in their extensive view of the Earth
- A corollary of this attribute is that a space vehicle is in sight of vast areas of Earth’s surface
- Space exists as a distinct medium
- Space power, alone, is insufficient to control the outcome of terrestrial conflict or insure the attainment of terrestrial political objectives

Chapter 5: “A Theory of Space Power” (continued)

- Space power has developed, for the most part, without human presence in space, making it unique among all forms of national power
- Situational awareness in space is a key to successful application of space power
- At some time in the future, the physical presence of humans in space will be necessary to provide greater situational awareness

Chapter 5: “A Theory of Space Power” (continued)

- Technological competence is required to become a space power, and conversely, technological benefits are derived from being a space power
- Control of space is the linchpin upon which a nation’s space power depends
- As with earthbound media, the weaponization of space is inevitable, though the manner and timing are not at all predictable

Chapter 5: “A Theory of Space Power” (continued)

- Scientific research and exploration pays off
- Space operations have been and continue to be extremely capital intensive
- There will be wild cards

Unpredictability and ‘Space Power’

- “I suspect that the universe is not only queerer than we imagine, it is queerer than we CAN imagine” – JBS Haldane, 1935
- SPT: “The only recipe for Haldane’s warning is to stretch our imaginations now and every day of our lives” (p. 131)
- SPT: “We need the ‘fringe’, those at or beyond the boundaries of accepted thinking. Space power will challenge the assumptions of the culture and its leaders. Bright minds are a prerequisite -- including those considered eccentric, even crackpot. **Space power cannot advance merely from classic cookbook applications of current engineering knowledge.**” (p. 135)

“Space Power Theory” -- the book

<http://www.jamesoberg.com/spt.html>

Howell Estes: The book is “the opening statement in what I hope will be a meaningful debate about space power theory... This book will serve its intended purpose if it sparks a debate and serves as a catalyst for others, to advance their thoughts on space power theory.”



SPACE POWER

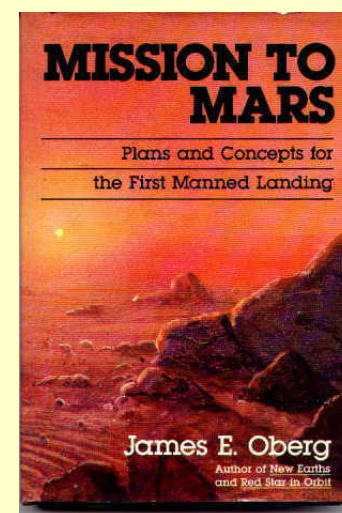
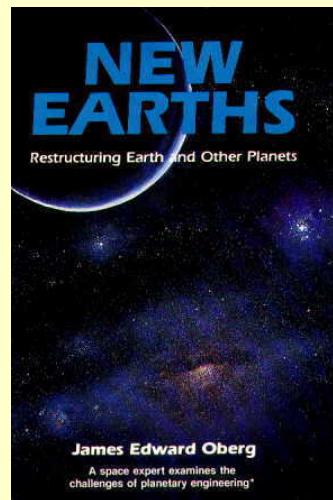
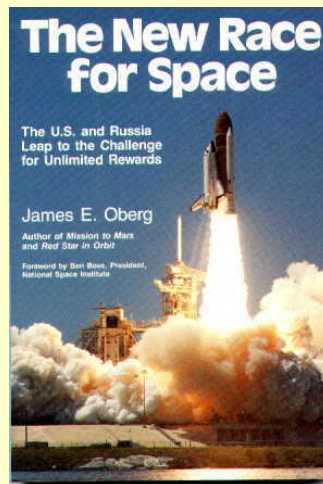
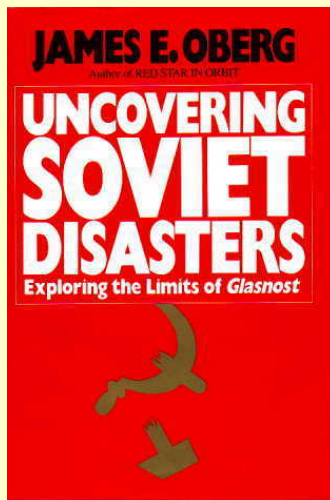
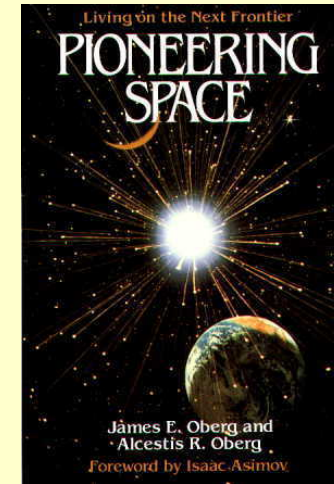
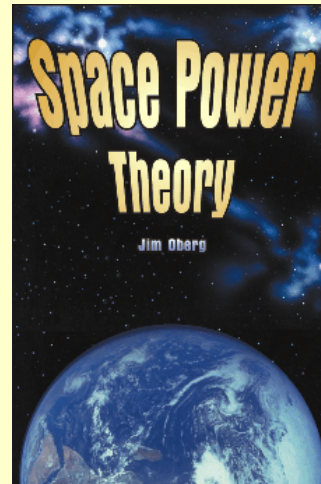
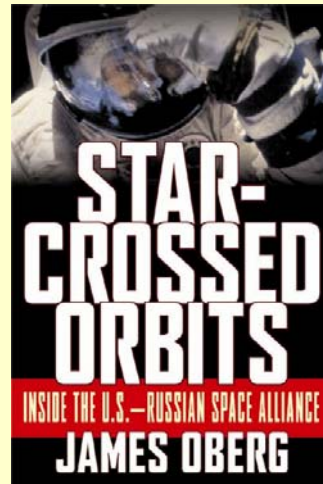
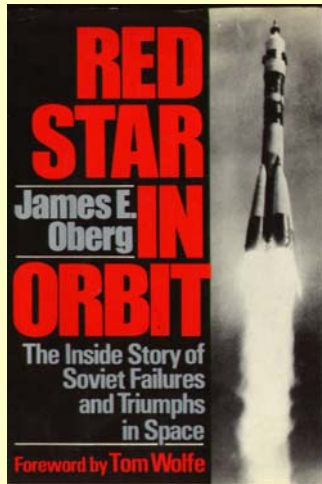
“Knowledge
is power,
in space
as on Earth”

Spaceflight Consultancies

- Launch services assessments
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... And books as well



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Star-Crossed Orbits -- Inside the US-Russian Space Alliance

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(more)

Star-Crossed Orbits (continued)

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- *American Scientist*:: "His sleuthing and storytelling abilities make this a gripping narrative"
- Walt Cunningham, Apollo astronaut: "Finally, someone is telling it like it is about the Russian manned space program - the good, the bad and the ugly. I have relied on Jim for years because no one knows it or tells it like he does."
- Gregory Bennett: "Riveting prose that grabs your attention and won't let loose"