

Based on the foregoing analysis, there are twelve space operations that could be ambiguous, either now or in the foreseeable future. In the remainder of this chapter, each of these will be considered briefly.

3.2 Brilliant Pebbles: Ballistic Missile Defence or ASAT System?

Brilliant Pebbles are billed as SDI defense weapons against suborbital targets (ballistic missiles) and thus are not "space weapons" in the narrow definition used here. In fact, however, they are designed to attack not only ballistic-missile booster rockets, but also the missile bus carried by those rockets, in case they don't reach the rocket booster prior to burnout. This means they also have the inherent ability to target most satellites; hence this putative "ballistic-missile-defense weapon" could easily be used as an ASat weapon.

Brilliant Pebbles are especially dangerous as space weapons because they have enough fuel to attack every Earth satellite — no matter how high the orbit. This would be the first ASat weapon capable of threatening GEO satellites.

Another important characteristic is the economy of these space weapons. The plan is to launch 4,164 of them in the initial procurement phase. Development funding is in the multi-hundred-million-dollar range, and orbital testing against target vehicles is planned for late 1991, indicating that this system could be in orbit within three years. With such a system in place, the USA would have the capability to disable all currently operational Earth satellites, and have enough capacity left over to interdict space launching by other nations.

The main aspects of "ambiguity" for Brilliant Pebbles are the observables of a large constellation (making this very effective as a first-strike-support ASat), the very large fuel/oxidizer tanks (allowing all Earth satellites to be threatened), and the critical capabilities of tracking, intercept, communications and control.

3.3 What Might Radioactive Emissions Mean?

Detected radioactive emissions (an observable) might cause confusion between a nonweapon space nuclear reactor and orbiting nuclear bombs. Similar confusion might arise between these and the operation of a nonweapon (physics research) particle accelerator in space, or the use of antimatter in nonweapon space propulsion, or the use of antimatter for space weapons; all of these operations can generate radioactive emissions.

3.4 Solar Power Satellite or Microwave Beam Weapon?

Solar power satellites would be effective as a directed-energy weapon against other satellites by depositing intense microwave beams, by overloading