

It is especially important to note that just because a satellite *can* harm another satellite does not mean that it *will*. Moreover, while intent can never be fully verified, it does help to be knowledgeable concerning possible space operations, both current and planned (the subject of this chapter), so as to be able to identify (and hopefully remove) any ambiguities that may arise (the subject of the next two chapters).

2.2 Methodology

Nonweapon space operations will first be surveyed, followed by weapon space operations. Then (next chapter) these two surveys will be categorized and cross-referenced to identify operations in one list that could be confused with operations in the other. Because the discussion is centered on space weapons operations, ICBMs, for example, are outside scope, as are Earth-launched ASat weapons, and weapons threatening lunar targets.

Issues that frequently arise in the specification of space weapon operations include questions relating to research, development, testing, and deployment. The precise definition of these activities, especially in the business of arms treaty negotiation and interpretation, is a matter of poignant debate. For example, it has been claimed that the much publicized Strategic Defence Initiative Program of the 1980's is in direct violation of the 1972 *Anti-Ballistic Missile Treaty* which forbids, among other activities, the "development" of ABM systems, unless it is "basic research." No explicit distinction will be made here between these subclassifications of space weapon operations. In fact, given that projections are to be made for *possible* operations, with the implication that research could lead to future deployment, this distinction is not helpful.

2.3 Nonweapon Space Operations

Existing satellites carry out a wide range of activities. A list of current *non*-weapon space operations is shown in Table 1. Capabilities can be grouped into classes such as these, based on the main function of each type of spacecraft, because with satellites form tends to follow function. Thus, all spacecraft carrying out a specified function will tend to look much the same. Conversely, much can be inferred about a satellite's functions from its observable characteristics.

In addition to these current operations, several new space activities are planned for the future, including satellite repair, lunar exploration, space power generation and transmission, lunar mining, Mars exploration, and asteroid mining. These activities must be supported, in turn, by a number of new (nonweapon) space operations, such as those listed in Table 2. These operations are often most conveniently identified in terms of the types of space vehicle required to carry