CHAPTER 1

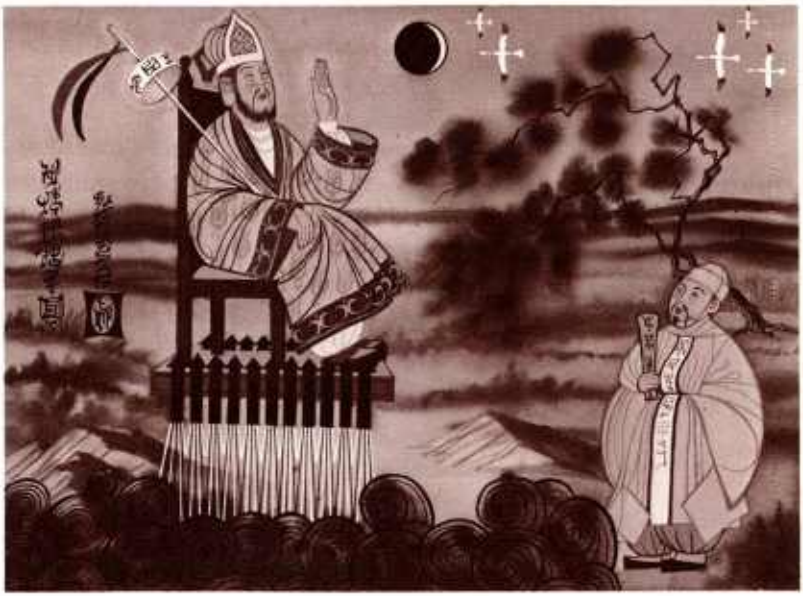

FIGURE 1 Wan Hoo and his space veh cle

FLIGHT—THOUGHTS, TRIALS, AND SUCCESSES

INTRODUCTION

Today we live in a world where the doctrine of aerospace power—aerospace leadership—is necessary not only to insure a nation's economic health, but also to insure the very survival of that nation. Regardless of whether we are talking about the United States, the Soviet Union, or any other nation that strives to become a world leader, that nation subscribes to the doctrine of aerospace power. Without this doctrine, any nation becomes a second rate power.

The doctrine of aerospace power, even though it is vital to our survival, is either unknown or misunderstood by the citizenry of this nation. To insure the maintenance of our aerospace leadership, it is therefore also vital that our citizenry be informed about aerospace developments and understand the importance aerospace power plays in our national policy. This can be accomplished only through a comprehensive aerospace education program which reaches the majority of the population.

We must not confuse aerospace education with aerospace training. Aerospace training is preparation to enable a person to participate in some aerospace activity. Whether this is training to be a pilot, engineer, stewardess, flight surgeon, or mechanic, it falls in the category of training (Chapter 9). Aerospace education is designed to enable our populace to understand the doctrine of aerospace power. This course, which you are beginning with this text, is an aerospace education course. It is designed to provide understanding—not career training. Let's begin by looking at what is meant by aerospace power.

Aerospace is defined as the expanse beyond the Earth's surface and includes the region which classically has been called the Earth's atmosphere and also the space environment beyond. We believe that the aerospace environment is one medium, not two; that the density of the Earth's atmosphere diminishes as you go higher; but at no point does the atmosphere abruptly stop and space begin. Aerospace power is a nation's capacity to act in this expanse beyond the Earth's surface. This is not, as many people suppose, only the ability to use the aerospace environment for hostile purposes, but rather it is the total aerospace activity of a nation—civilian and military, commercial and private, potential as well as existing.

A nation's capacity or ability to use the aerospace environment is determined by many factors. Among the most obvious of these are (1) the civilian aerospace community, including all commercial, pri-

vate, or other non-military aerospace activities, together with its air and spacecraft, equipment, personnel, and supplies, and (2) the military aerospace community, including all its military aerospace activities, together with its aircraft and spacecraft, equipment, personnel, and supplies.

Other factors which contribute to a nation's aerospace power are its aerospace facilities (airports, meteorological facilities, repair and maintenance, etc.), and its aerospace industries (manufacturing, research, engineering). These two factors, however, (facilities and industries) are dependent upon the civilian and military communities for their existence. For example, if there were no civilian air fleet, there would be no need for an industry to build airplanes nor for airports to land them.

These are all evidences of the present status of a nation's aerospace power and are visible national assets. However, equally or possibly even more important are the factors which determine a nation's potential aerospace power. These factors, which contribute to or limit a nation's aerospace power, include such things as: (1) geographic conditions; (2) resources; (3) industrial development; (4) political conditions and (5) population.

We can all think of examples of nations whose aerospace power is limited, or even non-existent, because of geographic conditions (location, size, climate and weather). It is also obvious how lack of resources (economic or technological) will impose limitations on a nation's capacity to act. Less obvious, but equally as limiting, are a nation's politics and its population. This is particularly true in a democracy. A democracy's aerospace power is controlled by the temperament and general educational level of its population and by government policies and national incentives just as much as it is by any other of the factors we have discussed.

Historically, one of the greatest assets of the American people has been their pioneering spirit. This is as true in aerospace as in any other area. We have always had a sense of national pride in our excellence and our leadership in aviation and in our space program. This pride and spirit have been as much responsible for our aerospace power as any other factor. Recently however, we have seen an erosion in our aerospace programs which has been caused not by a lack of ability, but rather by both a lack of interest by our citizenry and by changing national incentives. Regardless of the cause, the effect is the same. This nation is being placed in a position of jeopardy in both military