

Planetary exploration 101

Xtronaut

By Dante Lauretta and Michael Lyon

XTRONAUT ENTERPRISES: 2016. US\$35

Xtronaut — or “the game of Solar System exploration” — has the distinction of being (to my knowledge) the only game ever designed by the leader of a space mission. Dante Lauretta is indeed the principal investigator of OSIRIS-REx, NASA’s New Frontiers spacecraft currently en route to the asteroid Bennu, a piece of which it will bring back to Earth in 2023. Professor Lauretta’s Q&A, also in this issue, reveals some details of the game’s conception, production and reception, whereas here the focus will be on the game itself.

The game’s purpose is straightforward: assemble a rocket in order to fulfil an assigned scientific mission of Solar System exploration. Each mission gives points according to its difficulty, and the first player who accumulates ten points wins (usually two to three missions are needed). Xtronaut is mostly based on a deck of cards from which players can draw spacecraft components and other special cards that affect the game in various ways. The key condition to be met for launching a successful mission is ‘delta-v’, a unit representing the impulse you need to make all the required manoeuvres for a successful outcome. Each mission has a different delta-v objective depending on its complexity. The game cleverly adds some complications (all the spacecraft components must be of the same aerospace manufacturer and players cannot keep more than five cards in their hand at the end of their turn) that stimulate interaction and trade between players, forcing them to cooperate even if they compete for victory. Special cards include gravity assists to add delta-v and action cards that activate a variety of effects, from drawing more cards to cancelling the mission of an opponent or being blocked by government shutdown.

Importantly, Xtronaut succeeds to make a complex topic accessible. The game can be easily played by a family with kids —



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the box gives seven years as the minimum playing age and comments from various users indicate that it is not an exaggeration, even if kids may not understand all the layers and the meanings behind the mechanics of the rules. The rules are easy to grasp, so it can also be enjoyed by non-experienced players, and a full game is quite fast, lasting about 30–45 minutes. On the other side of the spectrum, it will be appreciated by astronomers as well, particularly those who have been involved in some real space exploration mission, as Lauretta got the idea of several action cards from his own (often frustrating) experience. All missions are realistic and potentially feasible: most have been proposed, if not accepted, during NASA’s or ESA’s announcements of opportunity. Despite its simplicity, the trade mechanism and the hand card limit can create interesting strategies for gaming experts, even if at times players are stuck in a cycle of drawing and discarding cards for a few consecutive turns in search of the remaining needed cards for accomplishing their mission.

Last but not least, the game has great potential for education and outreach. For example, players select missions (except for the first, which is random) from three options based on a one-sentence ‘briefing’ on the back of each card. A chance to learn interesting facts on celestial bodies in our Solar System for non-experts or a fun refresher for planetary science veterans, the game encourages players to engage with the topic, making planetary exploration more than a simple backdrop to a set of game mechanics. And of course, the whole concept of assembling a rocket and making some basic computations to derive the required delta-v (I suggest the variant where fewer points are awarded if the achieved delta-v is much higher than needed) conveys the basics of mission planning. The rulebook has additional information on planetary missions and OSIRIS-REx for those interested in digging deeper. □

REVIEW BY LUCA MALTAGLIATI

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