My Favorite Audience Warm-up, "Find the Planets"

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BIOGRAPHY

Dr. Ann Bragg is the Director of the Anderson Hancock Planetarium at Marietta College in Marietta, Ohio, where she is also an associate professor of physics. She presents outreach programs to all ages and teaches physics and astronomy classes across the undergraduate curriculum. She enjoys bicycle touring in her spare time.

ABSTRACT

I begin most live star talks by pointing out the planets currently visible in the sky that we are viewing. To make this process more interactive, I ask the audience members to locate the planets and have them “guide” my laser pointer with verbal directions. Both correct and incorrect answers can lead to fruitful discussion, and shouting out directions early in the program helps loosen up the audience. Introducing this element of uncertainty into the beginning of my live shows also helps keep my presentation from getting stale over time. I plan to demonstrate how this works for me in practice and hope to hear what works for other planetarians.

INTRODUCTION

Outreach programs at the Anderson Hancock Planetarium generally consist of three parts: a live star talk using our opto-mechanical GOTO Chronos star projector, a fulldome video, and a live question & answer time. I begin most of the star talks with the planet-finding activity described in this presentation. I will describe/demonstrate how this activity proceeds and then I will discuss its benefits.

I. DESCRIPTION/DEMONSTRATION OF ACTIVITY

After the lights have dimmed and the night sky is visible on the dome, I tell the audience how many planets are visible in that night’s sky. Next, I ask them to look around and see if they can find any of the planets. After giving them several seconds to look, I ask if anyone thinks they have found a planet. I usually receive positive responses and then ask where they are looking. Sometimes an audience member will suggest a cardinal direction, but other times I will get responses such as “Over there!” When I receive the latter type of response, I will ask specifically about whether they are looking north, south, east, or west. Once someone provides an answer, I aim the laser pointer near the horizon in that direction and then ask the audience to guide my pointer to the possible planet. The audience guidance can get quite vocal at this point, especially if audience members disagree about the location of the planet (or if I am deliberately clumsy in my direction-following!) Once my pointer lands on an object that at least some of the audience agrees is a planet, I ask them why they think it is a planet and which planet they think it is. Then I let them know what they have actually located.

When bright planets such as Jupiter or Venus are visible, the audience generally finds them quite easily, though they often do not correctly identify which planet they have found. At this point, I may briefly describe why these planets are so bright from Earth, as well as the fact that Venus is in the west when visible in the evening sky. The audience also usually does well locating Mars, though sometimes they will instead locate a star such as Betelgeuse or Antares, which provides me with an opportunity to explain that some stars are also red.

Saturn and Mercury are much more difficult for the audience. When one or both of these planets are visible, the audience will often select multiple bright stars before finding the planets, which often requires the help of a few clues. Then we can discuss why these planets are more challenging to spot and how ancient peoples could tell planets and stars apart. When three or more planets are visible across the sky, I may introduce the idea of the ecliptic. When an object is identified by the audience as Uranus or Neptune, we discuss how these planets are only visible with telescopes and were only discovered relatively recently as a result.
II. BENEFITS OF ACTIVITY

Asking the audience to locate the night’s planets definitely takes more time than simply pointing them out to a passive group. I have found that beginning a show this way has a number of benefits that are well worth the time investment.

II.1 Engage Audience in Actively Looking at the Sky

When asked to locate planets on their own, audience members look more critically at the sky and begin to make judgements about which objects might be planets. This exercise gets them viewing the sky more actively throughout the rest of the star talk and better prepares them for viewing the real sky on their own. After being forced to commit to which objects they think are planets and to identify their directions in the sky, I believe that visitors are more likely to remember the actual planet locations after the show.

II.2 Engage Audience as Active Participants in the Show

Beginning planetarium shows with an audience-participation-heavy exercise sets a very different tone than beginning with the presenter broadcasting lots of information to a passive audience. It sends a signal to the audience that their own observations of the sky are important, that it is okay to respond audibly to the presenter, and that their input is valued. After beginning a show this way, I generally find my audiences to be more responsive throughout the program and more inclined to ask questions at the end. While it might seem that there is a risk of opening the floodgates to disruptive behavior/questions throughout the program, I have never had a problem with an audience member derailing a program through excessive interruptions as a result of inviting their participation.

II.3 Introduce Spontaneity into the Show

When presenting numerous planetarium programs, it is easy for the content of the star talk to start to feel stale. I am surely not alone in sometimes feeling like my voice and my laser pointer are indicating constellation locations without any actual participation by my brain. Audience participation helps me avoid this state. When they are directing me to planet locations, it is different every time. I cannot simply repeat what I said to the last group because things happen in a different order and sometimes a totally unexpected object is identified as a potential planet (such as the LED light on the classroom projector in the back of our dome!) Sometimes interesting misidentifications by the audience can lead the show in directions that I never would have planned on, but that are worthwhile and that meet the audience where they are in terms of understanding and interest.