What is a Planet? Bill Schmitt

I have been traveling that past few weeks and pondering the what is a planet question. Here are a few of my thoughts:

I really do not care much how Pluto is classified but I do love the press it is getting and I think I like the attempt to classify what I think are some borderline planet like objects. What I like best is that this issue should give us, as Science Teachers, many teachable moments especially as related to the nature of science.

In about 1964 Morris Shamos as President of NSTA distributed flyers that said “The laws of nature are made by people.” It is also true that the ways we sort and classify things are invented by people. It is important that we invent principles or laws and compare things based upon their properties to help us understand nature even though nature does not have laws or categories as we usually think of them. Thus a part of science literacy is that we find out that human knowledge is after all—human. It is also important to know that classifying things can be done in many ways and the test of a system of classification is not if it is right or wrong, but rather if it is helpful for understanding nature. There can be many ways of classifying the same things and each way can help our understanding.

Another issue from philosophy that I think of is that “You can never go bald one hair at a time.” Essentially the loss of just one hair does not change your appearance and the difference between looking bald or not bald has a transitory stage as do all categories of things in nature that we invent. Things are never, or almost never, black and white. Thus trying to decide when a planet becomes something else is a very difficult problem and there is never a final answer even though there are several good answers.

In light of the Pluto issue, I believe that this problem is best resolved for kids by engaging kids in doing what we already do which is to have them invent their own sorting and classifying based upon properties and/or position of things in the universe so they understand the process of Science knowledge construction and change. We do this as we give kids a chance to use their own reasoning to sort materials such as solids and liquids, living creatures, seeds, clouds, soil particles, mountains, and, yes, even planets.

The question of planets is not about how many planets there are—which, by the way can never be answered. Rather the question is more about how many kinds of things can we find in an area, such as around the Sun, and how can we classify them to be most helpful for us to construct a mental model of a system that we have never seen completely. Then, as new systems of categorizing planets and materials are invented, the new systems would just be good new possibilities added to a list of good possibilities. If textbooks did this, new classification systems would not make textbooks obsolete and kids just may become more science literate.

Perhaps Neil Tyson, Director of the Hayden Planetarium in New York, was on to something several years ago when he suggested that it would be more helpful for our understanding to not classify Pluto as a planet. But then again—maybe not. What do you think and why? What classification is most helpful to you?

Bill Schmitt, Executive Director & Science Partner
The Science Center of Inquiry (480) 816-6094
bill@thesciencecenter.org [1]

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