

The “impressionist” force of creation stories in planetary sciences education and outreach

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Abstract

Any truly meaningful presentation of a planetary science topic to both pupils/students and the general public should contain three modules. First, there should be all the necessary phenomenology, detailed description of “players” (i.e., planetary bodies and the sources of external influences). Second, there should be similarly complete description of “rules” (i.e., natural forces and factors). Third, one should not forget to provide a “life story”, the evolutionary background (i.e., scenarios for origin, development and probable end of relevant planetary bodies).

There is nothing new in this basic classification of the material presented to the class or to the general audience. It is a summary of collective wisdom of experienced teachers as well as that of non-teacher scientists engaged in public understanding of science activities. Nevertheless, there is an important caveat in this sequence. The audience could get lost a touch with the topic. This would lead to diminished attention in both the first module (overwhelming by facts and associated numbers) and in the second one (overwhelming by the complexity of interactions).

It is suggested that this could be averted by partial inversion of the above working sequence in “emergency situations”. For example, if the audience is distracted by some strong influence, like crucial football/ice-hockey match or a fashion display. That means, one should not present the topical material strictly in a usual 1-2-3 style (phenomenology-causality-evolution) but in modified 3-1-2-3 style (evolution-phenomenology-causality-evolution). Of course, a very natural question arises here: Is it possible, at all, to talk or write about evolution without presenting known facts and causes and effects involved beforehand? The answer, based on a large number of trial-and-error efforts, now seems to be: Yes, it is. One should take a lesson from great

painters of the second half of the 19th century who have started and then pursued systematically a radical innovative approach, impressionism. In this context it means one should try to stimulate the curiosity and imagination of the audience through depicting the “scene and players” both realistically and slightly “surrealistically”, concentrating on key events of birth and death, so to say, no matter how far these lay in the past or in the future, so the relevant data and their interpretations are necessarily uncertain and/or ambiguous. Anything that could be viewed as a “step too far” beyond science, can be discussed and made more precise in the second “apparition” of module 3.

The author has a very good experience with so-called creation stories (“In the beginning, there was a...”), especially during the introductory parts of oral lectures. The basis is an “evolution-light” synthetic view of individual planetary bodies or the Solar System as a whole. It should not last longer than 10 minutes. The emphasis is on key phenomena and processes wrapped in a kind of mystery which surrounds, naturally, the questions of birth and death, using the means similar to those of impressionists. In this way, virtually any imaginable planetary topic could be incorporated in one or more of seven such stories. Story 1 has to do with planetary systems in the context of parent stars and galaxies. Story 2 concentrates on the Solar System. Story 3 is devoted to the terrestrial planets. Story 4 to the Earth. Story 5 to gas giant planets. Story 6 to asteroids, comets and meteoroids. And Story 7 to comparative surface evolution, including the biology. The comparisons are used as a fundamental tool. The second module 3 in the sequence then serves, in addition to deepening the main narration, as a replay or a second spot frequently used in TV advertising business (*Repetitio est mater studiorum*). The author presents some battle-verified tools and expressions from the stories.