

## A history of gravity: An introduction to the Epistemology of Paul Feyerabend

The global education has to deal with a lot of difficulties; some of them are related with the student's lack of interest in ordinary physics' classes, these problems have a negative impact at the general science and specifically at Astronomy. Once the education is focused only in one point of view and consequently in a specific amount of equations to be memorized, most students are not stimulated to think a little about science and the growth of knowledge. The goal of this work is provide a reflexive way of learning some historical aspects of gravity and consequently stimulate discussions between teachers and student during regular classes. According to the philosopher Paul Feyerabend, all scientific explanations about the nature are just temporally truth. The same author defended during his life that even an ancient and obsolete scientific vision of world may be important for the comprehension about the evolution of science. The historical aspects of Astronomy could be more involved at the regular education; this is an important tool to show that the understanding of nature is always changing. Learning at this point of view, new generations of student can be convinced about their importance for the continuity of science. As an example, we are going to resume three different explanations for the gravity, all then were important in a specific period of time.

The first explanation for the fall of bodies that we are going to comment is given by Aristotle and lasted for almost 2000 years, is a complex and coherent interpretation of the entire cosmos. If all objects in our planet are composed by water, air, fire and earth, they have a natural tendency of movement. This tendency appears especially during the free fall. As an example, an object composed mainly by earth tends to go back to earth's natural place at the cosmos, the same would happen with an object composed mainly by water, fire or air.

The Newtonian interpretation is the most exposed in regular physics' classes, according to this view, all bodies make attraction in all other bodies, just because of their masses. There is no explanation about the origin of the gravitational interaction but just a description, most student get used to memorize an famous equation in spite of think about the nature of this interaction. Finally, we could also include the interpretation given by the general relativity that considers gravity not as a force but a deformation at the space-time structure, cause by masses. As a suggestion, teachers could explain a little about some theoretical aspects of relativity in a discussion about gravity. An interesting point about the epistemology of Feyerabend is his complain about the regular learning of science. Students are generally in touch just with Newtonian gravity, but this is not the single possibility of speaking about this important topic. The multiplicity of theories is a way of expanding horizons, is a stimulation of reflections about the real development of Astronomy. The contact of our students with different visions of world is an opportunity to show them that science is still under construction, many people thought in past that the Aristotle's cosmos or Newtonian's gravitation were a complete description of nature. Nowadays do not we have the same impression about the General Relativity? Will be possible to find in future a complete description of nature? This kind of question shows an interesting aspect of science unknown for most students and may be explored as an approaching between the next generation and the Astronomy.