

certainties:

- humility in noting prognostic errors committed in the past. It suffices to recall the affirmations made by or attributed to several very great scientists: "You cannot breath in tunnels," "science is almost finished," "something heavier than air cannot fly," etc. It would therefore be presumptuous to claim to foresee, based on our current knowledge and accomplishments what might be technologies (-----) only slightly more advanced than our own - or our own technologies in one or two centuries. Let us consider that only 150 years ago, engines, electricity, the existence of the atom, and Hertzian waves were unknown! We can also reread Jules Verne: *Paris au XX^e siècle [Paris in the 20th Century]* or *Hier et demain [Yesterday and Tomorrow]*...

- certainties, since scientific and technical progress can only continue, supported by more scientists and engineers than there have ever been, spurred by competition among nations. This competition, in our now "closed" world will focus on all of the resources that once were free: potable water, the deep sea, the polar regions, air, space, radio frequencies, etc.

Although it is risky to predict the results of an increasingly accelerated scientific and technical development, it is, at least, almost certain that our own knowledge will have advanced greatly even within a few decades. There's no telling what progress will be made beyond that time! Under these circumstances, we can conclude with a high degree of certainty that movements of objects that at present are just beyond our capabilities will be technically possible within a few decades, or even a few centuries, even if the knowledge put into play is not what we are predicting.

To the extent that the preceding conclusion is acceptable, let us go further and comment that only a few million years will have elapsed (barring a catastrophe) between the appearance of man and the future stellar expeditions of our descendants (cf. Chapter 8.3.6 and Appendix 4).

This interval between the appearance on earth of a conscious intelligence and the time when we will be able to perform the same feats as those performed by the objects we are dealing with here is infinitesimal (one to two thousand years) compared with the age of the earth or even with the 600 million years that separate us from the appearance of the first living organisms at the beginning of the Cambrian period.

But the development of other intelligent [beings] on other worlds cannot have taken place at exactly the same rate as on earth. If the age of these other worlds, like that of the earth, is on the order of 4 billion years, and if a conscious life [form] appeared, neither the rate of its development nor the epoch in which that world was created cannot have been exactly the same as ours.

Under these conditions, even a minuscule deviation of 0.1%, for example, in regard to these initial data would make it possible to place such a civilization between several million years ahead of ours and several million years behind ours.

Thus the probability of the extent of development of two civilizations in the universe, and in the same solar system, being equal appears to be very low, and in all likelihood we have only two possibilities:

- our "neighbors" are several thousand or several million years behind us (or do not yet exist as a conscious species), and it will be we who discover them,

- our neighbors are ahead of us, but then the probability is that this advance figures in the thousands of years or more, rather than in years or even hundreds of years, and if we can judge from the rate of our own development, their level of development would certainly exceed our forecasting capabilities in every domain.