TECHNICAL EVOLUTION AND POSITIVE FEEDBACK

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Poster Paper

The technical evolution of mankind is necessarily related to the replacement or supplement of well-established, stable, "natural" regulatory processes by artificial ones that contain components of positive feedback. Such feedback is very effective in changing a situation in a relatively short time, but it must be replaced by another regulatory process after only a few time constants in order to avoid exponential explosion. In general, the interaction of many different regulatory processes gives rise to a reasonable damping of any explosive situation by a non-linear process. Technical evolution relies on inventing a positive feedback situation as well as a corresponding damping process. However, experience shows that one generally starts with the first and thinks of the latter only after the exponential situation is more clearly seen and its danger is noticeable.

Present plans for space colonization are essentially based on only the first part. For instance, one thinks of creating an atmosphere on Mars within 1000 years but not yet on how the growing of the atmospheric density could be stopped in time. The concept of galactic colonization seems to be of similar quality. Any ETI, not only ourselves, would be unable to adapt to a new environment unless it were changed within a very short time. The shorter the time and the larger the change, the more difficult it is to stop any change by damping. We propose that the present concept of galactic colonization is rather unrealistic.