# A qualitative classification of extraterrestrial civilizations

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Context. Interest in searches for extraterrestrial civilizations (ETCs) has been boosted in recent decades by the discovery of thousands of exoplanets. Aims. We turn to the classification of ETCs for new considerations that may help to design better strategies for searching for ETCs. Methods. This study is based on analogies with our own biological, historical, technological, and scientific development. We took a basic taxonomic approach to ETCs and investigated the implications of the new classification on ETC evolution and observational patterns. Finally, we used the quantitative scheme of Kardashev and considered its implications on the searches for ETCs as a counter example to our qualitative classification. Results. We propose a classification based on the abilities of ETCs to modify and integrate with their environments: Class 0 uses the environment as it is, Class 1 modifies the environment to fit its needs, Class 2 modifies itself to fit the environment, and a Class 3 ETC is fully integrated with the environment. Combined with the classical Kardashev scale, our scheme forms a two-dimensional method for interpreting ETC properties. Conclusions. The new framework makes it obvious that the available energy is not a unique measure of ETC progress: it may not even correlate with how well that energy is used. The possibility for progress without increased energy consumption implies a lower detectability, so in principle the existence of a Kardashev Type III ETC in the Milky Way cannot be ruled out. This reasoning weakens the Fermi paradox, allowing for the existence of advanced, yet not energy hungry, low-detectability ETCs. The integration of ETCs with the environment will make it impossible to tell technosignatures and natural phenomena apart. Therefore, the most likely opportunity for SETI searches to find advanced ETCs is to look for beacons, specifically set up by them for young civilizations like ours (if they would want to do that remains a matter of speculation). The other SETI window of opportunity is to search for

ETCs at technological level similar to ours. To rephrase the famous saying of Arthur Clarke, sufficiently advanced civilizations are indistinguishable from nature. 

Astrobiology

Extraterrestrial intelligence

History and philosophy of astronomy

Energy utilization

Available energy

Counter examples

Detectability

Fully integrated

Natural phenomena

Qualitative classification

Scientific development

Technological level

Biology