# Letters to the Editor

**Dear Editor:**

Several of my colleagues have demanded, often publically, that I provide them with a *genus-differentia* definition of *artificial intelligence.* I suspect that their motive was summary rejection of new-fangled techniques, not eymological enlightenment. In any case I answered them. I tried to capture the invariant structure of the many reportive definitions available, distinguish the term from *robotics* (adaptive control theory), and keep all notions of "wetness" out of the definiens. Perhaps your readers may be interested in the answer.

Sincerely yours,
Bart Kosko
University of California,
San Diego

**Definition 1.** An agent *knows* some statements if the following three conditions hold:

1. $s$ is *true*, *i.e*, $s$ is either a logical truth (a theorem or a tautology) or a factual truth (a correspondence with fact);
2. the agent *believes* that the statement is true, *i.e*, if verbally stimulated, the agent emits an assent response to $s$, a dissent response to not-$s$;
3. the agent can *justify* its belief that $s$ is true, *i e.*, the agent can provide (acceptable (relative to some predetermined and agreed upon evidential criteria)) reasons (logical arguments, or facts)

**Definition 2.** An agent's knowledge is the set of all statements that the agent knows (*i.e.*, the set [$s$: the agent knows $s$]).

**Definition 3.** An agent's problem-solving behavior is *intelligent* if (and to the extent that) the agent's problem-solving method combines *search* and *knowledge* so that the search time and quantity of knowledge are inversely related (*i.e.*, the knowledge prunes the search space).

**Definition 4.** An agent's problem-solving behavior is *artificially intelligent* if the behavior is intelligent and the agent is a machine.

Remark: It is a consequence of this definition of artificial intelligence that artificial intelligence does not equal artificial endocrinology!