

## 京大過去問 1998年 第1問

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There is a familiar fairy tale sometimes called “Darwinism” that probably would have shocked Darwin. The tale says that the systems of the body are well adapted to their functions, perhaps perfectly so. What that is supposed to mean is unclear. It is no principle of biology. On some interpretations, the statement just seems false. Nothing follows about the theory of evolution, which in no way suggests that the systems that have developed should be well adapted to conditions of life. They may be the best that nature could do under the constraints within which organisms evolve, but the outcome may be far from ideal. (1)For all sorts of reasons, specific organs might turn out to be more poorly designed than is possible even within these constraints; perhaps because such design failures contribute to modifications elsewhere in the highly integrated system that improve reproductive capacity. Organs do not evolve independently, of course, and a successful organism has to hang together in complicated ways. In general, little can be said without an understanding of the physical and chemical properties of complex organisms, and if we had that understanding, it would hardly be a surprise to discover significant “design errors” in organisms that are a “biological success” (meaning, plenty of them are around).

A familiar example is the human skeleton. Few people escape back problems, because the system is poorly designed from an engineering standpoint. That may be true for large vertebrates\* generally (though cows don't know how to complain about back pains). (2)The system works well enough for reproductive success, and perhaps it is the “best solution” under the conditions of vertebrate evolution. But that's as far as the theory of evolution reaches. In the case of language, there would be no reason to expect the system to be “well adapted to its functions,” and it seems not to be (at least, if we try to give some natural meaning to these obscure notions). The fact that large parts of language are unusable doesn't bother us; we use the parts that are usable, hardly an interesting fact.

\*vertebrates: 脊椎動物