

## 京大過去問 1995年 第1問

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Science rests ultimately on a set of assumptions, usually called axioms. These are statements, such as that the universe is infinite in all directions; or that science studied on the planet Earth will yield exactly the same results in the same circumstances in any other part of the universe. (1)The truth of axioms like these is impossible to prove, but one of the objectives of science is, or should be, to keep them under continuous review. The concept of time, for example, was implicitly thought until this century to be the same for any observer, anywhere, but Einstein showed that time was strictly a local matter. The axiom of constant time was shattered as soon as Einstein's theory had been accepted. Thus one scientist's axiom might be another's challenge, and axioms are only accepted as long as they survive.

The axioms provide the foundations of a science and convenient points of reference, but they are not tablets of stone, and every scientist has the right to challenge them. (2)Scientists also have a duty to prove to their colleagues that their observations are correct within the limitations of measurement, or that their hypotheses give a better account of a set of observations than all previous hypotheses, or that otherwise their view of the world is justified. The more general concept of truth, however, does not fit comfortably within scientific methodology. The concept of truth as used in everyday speech refers not only to accuracy, but also to such abstractions as loyalty and sincerity, and is intimately connected with the quality of human relationships. (3)Furthermore, if one accepts the axiom that the world's complexity is infinite, the scientific understanding we have at present will inevitably be incomplete, and merely the best we can manage for the time being, whatever our intentions; it will probably be only a matter of time, therefore, before that understanding gives way to a more general view. Scientists who do not accept that or any other axiom have a duty to show why they do not.