

# Paradigm(s)

For decades, the pharmaceutical industry has encouraged patients, students, healthcare professionals and drug regulatory agencies to adopt a way of thinking about drugs focused on their efficacy, trivialising the issue of adverse effects and sometimes even obscuring the dangers they pose to patients (see “Mediator<sup>o</sup> disaster: the damning appeal judgement”, pp. 303-306). In the meantime, Prescrire has been proposing another paradigm, another way of thinking about drugs that gives at least as much attention to their adverse effects as to their efficacy. Because a drug’s benefits must be weighed against its harms, and risks only accepted when there is robust evidence of efficacy. And because healthcare professionals should first do no harm.

For aeons, medical training has focused the minds of future healthcare professionals on the need to establish a “positive” diagnosis, often requiring a battery of diagnostic investigations. Meanwhile, primary healthcare professionals have embraced a different paradigm, in which they first rule out diagnoses of particular concern, looking for any red flags, then diagnose the most likely condition in the patient’s situation, while accepting a degree (sometimes a large dose) of uncertainty but remaining open to any new information. This approach usually relies solely on an attentive interview, supplemented by a physical examination if necessary.

Paradigms have become part of the fabric of various scientific fields, and are rarely, if ever, subjected to critical examination. The field of statistics is one example. Since the early 20<sup>th</sup> century, the paradigm known as frequentism has dominated, focusing on the p-value and a specific decisive threshold, which is usually set at 0.05. In a comparative study, if the p-value is below this threshold, it is often assumed that the efficacy of an intervention has been demonstrated. Prescrire regularly casts a critical eye on such simplistic interpretations by highlighting the uncertainty surrounding a result, in particular by reporting the confidence interval. But confidence intervals are also the product of the frequentist paradigm.

Another paradigm, called Bayesianism, offers another way of reasoning which, among other things, involves determining a credible interval around numerical results. One advantage of Bayesianism is that it is closer to clinical practice, answering questions such as, In view of the results of this trial, what is the probability that this treatment is effective? The frequentist approach, on the other hand, answers less intuitive questions such as, What is the probability of observing this trial result if the treatment is not actually effective? In its French edition, Prescrire has examined these two statistical paradigms and their usefulness to health professionals.

**Prescrire**