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The (meta)cognitive role of aesthetics in scientific practice

What has beauty to with science? Quite a lot, judging by what scientists say and do. It is quite common, for instance, to invoke judgements of beauty, aptness, and harmony when evaluating theories, cleaning data, or making field sketches, to favour simple models, and to be guided by a sense of elegance when solving problems. Research on aesthetics in science is primarily concerned with aesthetic features of scientific theories, but here I show that there is an aesthetic element also to scientific knowledge-how, that is, skilled scientific activity. Through examples, primarily taken from the earth sciences, I show that aesthetics plays a role not just on theorising but also in scientific practice. I argue that this aesthetic aspect of know-how can be explained as a special case of affective cognition, and that we can explain broadly aesthetic feelings and judgements in scientific and other epistemic contexts as upshots of metacognitive processes which monitors the quality and likely success of our cognitive engagement with the object of study. This allows aesthetic feelings to be rough-and-ready signals of epistemic value and thus explain how they can play a positive role in science. I use the natural sciences as a test case, but if what I argue is on the right track, then this is a common feature of human cognition and so generalises to other epistemic contexts.