The Economist – Why people forget that less is often more

When solving problems, people prefer adding things to getting rid of them

Colin Chapman, he founder of Lotus Cars, was one of motor racing's most influential engineers. He summed up his philosophy as "simplify, then add lightness". A stripped-down, featherweight car might be slower on the straights than a beefy muscle-machine, he reasoned. But it would be faster everywhere else. Between 1962 and 1978 Lotus won seven Formula One constructors' championships.

It appears to be an uncommon insight. A paper published in Nature suggests that humans struggle with subtractive thinking. When asked to improve something—a Lego-brick structure, an essay, a golf course or a university—they tend to suggest adding new things rather than stripping back what is already there, even when additions lead to sub-par results.

The research was motivated by everyday observation rather than psychological theory, says Gabrielle Adams, the paper's first author, who cites folk wisdom such as "less is more" and "keep it simple". Perhaps the need for such reminders was evidence of a blind spot in people's thinking?

Along with colleagues at the University of Virginia, Dr Adams conducted a series of observational studies. In one, participants were asked to alter a pattern on a grid of coloured squares to make it symmetrical. Although that could be done equally well by adding new squares or by deleting existing ones, 78% chose the additive option. Other tasks gave similar results. In three different studies involving modifying structures built from blocks, just 2-12% of respondents chose to remove blocks. Asked to alter an essay they had written, 16% cut words while 80% added them.

Nor was this tendency confined to the lab. Of 827 suggestions received by the new boss of an American university for how the institution could be improved, 581 involved adding new things, such as more grants for studying abroad. Just 70 suggested removing something, such as preferential admissions for children of alumni.

Having established that addition does indeed seem to be more popular than subtraction, the next step was to work out why. One possibility was that people were considering subtractive options, but deliberately choosing not to pursue them. Another was that they were not even thinking of them in the first place. Enter a new set of experiments, each with a twist.

Attempts to tilt the pitch in favour of subtraction made people more willing to try it, but only to a point. One experiment asked participants to redesign a lopsided Lego structure so that it could support a house-brick (see picture). Participants could earn a dollar for fixing the problem, but each piece of Lego they added cut that reward by ten cents. Even then, only 41% worked out that simplifying the structure by removing a single block, rather than fortifying it by adding more, was the way to maximise the payout.

Asking people to make a golf course worse rather than better did not change their preference for additions, scuppering the idea that extra features might be seen as desirable in their own right. Practice improved people's chances of spotting subtractive solutions, suggesting that many were simply not thinking of the possibility, at least at first. That conclusion was buttressed by results showing that people were less likely to try subtraction when they were under "cognitive load"—in other words, having to perform a second, unrelated task at the same time.

What all this amounts to, says Benjamin Converse, another of the study's authors, is evidence for a new entry in the list of "cognitive biases" that skew how humans think. The 2002 Nobel Memorial Prize in Economic Sciences was awarded for demonstrating that humans are not "rational" in the way economists had used the word. Instead of thinking a problem through and coming up with an ideal solution, they tend to use cognitive shortcuts that are fast and—mostly—"good enough".

Forewarned is forearmed, and such research has inspired an entire field dedicated to working out when such shortcuts lead people astray. Dr Adams and her colleagues, meanwhile, are keen to probe their result in more detail. One question is whether the preference for addition is innate or learned. Preliminary results from Japan and Germany suggest, at least, that it is not limited to America. ■

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