

Norbert Schwarz

*on judgments of  
truth & beauty*

Poets and scientists alike often assume that beauty and truth are two sides of the same coin.\* From John Keats's famous assertion that "beauty is truth, truth beauty" to Richard Feynman's belief that "you can recognize truth by its beauty and simplicity," beauty has often been offered as a heuristic for assessing truth. Yet the history of science is full of beautiful theories that proved wrong. Nevertheless, the assumed relationship holds considerable intuitive appeal for most people.

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Why? Recent psychological research sheds new light on this issue.

A growing number of experiments show that judgments of beauty and judgments of truth share a common characteristic: People make them, in part, by attending to the dynamics of their own information processing. When an object is easy to perceive, people evaluate it as more beautiful than when it is difficult to perceive; similarly, when a statement is easy to process, people are more likely to accept it as true than when it is difficult to process. Psychologists refer to the ease or difficulty of information processing as 'processing fluency.' Its shared role in judgments of beauty and truth renders it likely that we find the same stimulus beautiful as well as true.

In an influential series of experiments, Robert Zajonc observed in the 1960s that the more often his participants saw unknown graphical stimuli, like Chinese ideographs, the more appealing they found them. Later research traced this finding to the role of processing fluency. Previously seen stimuli are easier to recognize, and ease of processing generates subjectively positive experiences. As Piotr Winkielman and John Cacioppo observed, psychophysiological measures can capture this positive affective response, which feeds into judgments of liking, beauty, and pleasure. In short, we like things that make us feel good – but that feeling often derives from the dynamics of our own information pro-

\* For a fully referenced, extended discussion of this material see "Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience?" (with Rolf Reber and Piotr Winkielman) in *Personality and Social Psychology Review*, published in 2004, and "Metacognitive Experiences in Consumer Judgment and Decision Making" in *Journal of Consumer Psychology*, also published in 2004.

cessing rather than from the stimulus itself.

Because we can manipulate ease of processing in ways that are independent of the actual stimulus, a host of different variables can influence the perceived beauty of an object, as my students and I have found in diverse studies. For example, Winkielman, Rolf Reber, and I showed participants simple drawings of everyday objects, like a desk. Some participants had to identify the object as fast as they could, whereas others had to judge its aesthetic appeal. When a subliminal presentation of its outline preceded the drawing, the former participants recognized it more quickly – and the latter participants found it prettier.

Other studies have shown that any variable that facilitates fluent processing also increases aesthetic appeal, from previous exposure to a related word to figure-ground contrast. In fact, a review of variables known to influence aesthetic appeal – like symmetry, good form, or the gestalt laws – revealed that all of them share one feature: they expedite processing. From this perspective, beauty is neither in the object nor in the eye of the beholder. Instead, it arises from the perceiver's processing experience, which is a function of relatively haphazard situational influences as well as object and perceiver characteristics. As a result, a drawing of a shovel seems prettier after encountering the word 'snow' – provided you live in a place where snow and shovel are closely related concepts.

In addition to affecting judgments of beauty, processing fluency serves as a basis for many other judgments, including the familiarity or novelty of an object. In general, familiar things are easier to process, but not everything that is easy to process is familiar. Nevertheless, people erroneously infer that a stimulus

is familiar when it is easy to process because of some other variable, such as the way in which it is presented. Conversely, they infer from difficulty of processing that the stimulus has to be novel, even if the difficulty merely derives from a hard-to-read print. In one study, Hyejeung Cho and I asked participants to read a description of an electronic gadget that combined features of a cell phone, MP3 player, and global positioning system. As expected, they judged the product as more innovative when the description was printed in a more difficult-to-read font. That is, they concluded from the processing difficulty imposed by the print that the product had truly novel and unfamiliar characteristics – or else its description wouldn't have been so difficult to process.

This fluency-familiarity link influences judgments of truth. As Leon Festinger noted, we often rely on social consensus in making truth judgments – when many people believe it, there's probably something to it. Alas, we may feel that we've 'heard this before' for the wrong reason: a statement may only seem familiar because other variables make it easy to process. Supporting this conjecture, Rolf Reber and I found that people were more likely to accept a statement when it was easy rather than difficult to read against a color background. Similarly, Matthew McGlone and his colleagues showed that of two substantively equivalent statements people were more likely to believe the one presented in a rhyming rather than non-rhyming form. "Birds of a feather flock together" is certainly true – but "birds of a feather flock conjointly" just doesn't do it.

Unfortunately, this fluency-familiarity-truth link has many undesirable consequences. Not only does mere repetition of the same statement make it like-

ly that the statement is accepted (as advertisers and politicians have known for a long time), but, repeated enough times, even warnings can eventually turn into recommendations. For example, Ian Skurnik, Carolyn Yoon, Denise Park, and I presented older participants with health claims of the type, “Shark cartilage is good for your arthritis.” Half of the participants were explicitly informed that the FDA had determined that the statement was false. When tested immediately, they usually remembered the falsity of the statement, and the more so the more often they had heard that it was untrue. But after three days, the details of the message faded until all that was left was a vague sense of familiarity when they read the statement again. Now, participants were more likely to believe the statement the more often they had been told that it was false. Accordingly, educational campaigns should never repeat misleading information in order to educate people about its falsity. All such campaigns achieve is making the false information seem more familiar when it is encountered again, effectively turning warnings into recommendations. A more promising strategy is to limit information to what is true, making the truth as ‘fluent,’ or familiar, as possible.

As these examples illustrate, the subjective experiences that accompany our thought processes are informative in their own right. Far from drawing only on what comes to mind, or what we read or hear, we also draw on the metacognitive experience of how easy this information is to process. Unfortunately, it is often difficult to tell why some information is easy or difficult to process, and we erroneously attribute this experience to the wrong source. Hence, we may feel that something is familiar, and therefore conclude that ‘there’s probably some-

thing to it,’ simply because it is easy to read.

In addition, fluent processing ‘feels good’ and elicits a positive affective response. Again, we often misread this positive feeling as a result of the object’s characteristics and conclude that it is really pretty and appealing. Thus, fluency of processing can serve as an experiential basis of judgments of beauty and truth. This shared basis is probably one of the reasons why beauty and truth seem like two sides of the same coin, despite the many beautiful theories that have been sent to the graveyard of science for failing more diagnostic tests of truth.