

## NORMS, SURPRISES, AND CAUSES

The central characteristics and functions of System 1 and System 2 have now been introduced, with a more detailed treatment of System 1. Freely mixing metaphors, we have in our head a remarkably powerful computer, not fast by conventional hardware standards, but able to represent the structure of our world by various types of associative links in a vast network of various types of ideas. The spreading of activation in the associative machine is automatic, but we (System 2) have some ability to control the search of memory, and also to program it so that the detection of an event in the environment can attract attention. We next go into more detail of the wonders and limitation of what System 1 can do.

### ASSESSING NORMALITY

The main function of System 1 is to maintain and update a model of your personal world, which represents what is normal in it. The model is constructed by associations that link ideas of circumstances, events, actions, and outcomes that co-occur with some regularity, either at the same time or within a relatively short interval. As these links are formed and strengthened, the pattern of associated ideas comes to represent the structure of events in your life, and it determines your interpretation of the present as well as your expectations of the future.

A capacity for surprise is an essential aspect of our mental life, and surprise itself is the most sensitive indication of how we understand our world and what we expect from it. There are two main varieties of surprise. Some expectations are active and conscious—you know you are waiting for a particular event to

happen. When the hour is near, you may be expecting the sound of the door as your child returns from school; when the door opens you expect the sound of a familiar voice. You will be surprised if an actively expected event does not occur. But there is a much larger category of events that you expect passively; you don't wait for them, but you are not surprised when they happen. These are events that are normal in a situation, though not sufficiently probable to be actively expected.

A single incident may make a recurrence less surprising. Some years ago, my wife and I were vacationing in a small island resort on the Great Barrier Reef. There are only forty guest rooms on the island. When we came to dinner, we were surprised to meet an acquaintance, a psychologist named Jon. We greeted each other warmly and commented on the coincidence. Jon left the resort the next day. About two weeks later, we were in a theater in London. A latecomer sat next to me after the lights went down. When the lights came up for the intermission, I saw that my neighbor was Jon. My wife and I commented later that we were simultaneously conscious of two facts: first, this was a more remarkable coincidence than the first meeting; second, we were distinctly *less* surprised to meet Jon on the second occasion than we had been on the first. Evidently, the first meeting had somehow changed the idea of Jon in our minds. He was now “the psychologist who shows up when we travel abroad.” We (System 2) knew this was a ludicrous idea, but our System 1 had made it seem almost normal to meet Jon in strange places. We would have experienced much more surprise if we had met any acquaintance other than Jon in the next seat of a London theater. By any measure of probability, meeting Jon in the theater was much less likely than meeting any one of our hundreds of acquaintances—yet meeting Jon seemed more normal.

Under some conditions, passive expectations quickly turn active, as we found in another coincidence. On a Sunday evening some years ago, we were driving from New York City to Princeton, as we had been doing every week for a long time. We saw an unusual sight: a car on fire by the side of the road. When we reached the same stretch of road the following Sunday, another car was burning

there. Here again, we found that we were distinctly less surprised on the second occasion than we had been on the first. This was now “the place where cars catch fire.” Because the circumstances of the recurrence were the same, the second incident was sufficient to create an active expectation: for months, perhaps for years, after the event we were reminded of burning cars whenever we reached that spot of the road and were quite prepared to see another one (but of course we never did).

The psychologist Dale Miller and I wrote an essay in which we attempted to explain how events come to be perceived as normal or abnormal. I will use an example from our description of “norm theory,” although my interpretation of it has changed slightly:

An observer, casually watching the patrons at a neighboring table in a fashionable restaurant, notices that the first guest to taste the soup winces, as if in pain. The normality of a multitude of events will be altered by this incident. It is now unsurprising for the guest who first tasted the soup to startle violently when touched by a waiter; it is also unsurprising for another guest to stifle a cry when tasting soup from the same tureen. These events and many others appear more normal than they would have otherwise, but not necessarily because they confirm advance expectations. Rather, they appear normal because they recruit the original episode, retrieve it from memory, and are interpreted in conjunction with it.

Imagine yourself the observer at the restaurant. You were surprised by the first guest’s unusual reaction to the soup, and surprised again by the startled response to the waiter’s touch. However, the second abnormal event will retrieve the first from memory, and both make sense together. The two events fit into a pattern, in which the guest is an exceptionally tense person. On the other hand, if the next thing that happens after the first guest’s grimace is that another customer rejects the soup, these two surprises will be linked and the soup will surely be blamed.