

TOM W'S SPECIALTY

Have a look at a simple puzzle:

Tom W is a graduate student at the main university in your state. Please rank the following nine fields of graduate specialization in order of the likelihood that Tom W is now a student in each of these fields. Use 1 for the most likely, 9 for the least likely.

business administration
computer science
engineering
humanities and education
law
medicine
library science
physical and life sciences
social science and social work

This question is easy, and you knew immediately that the relative size of enrollment in the different fields is the key to a solution. So far as you know, Tom W was picked at random from the graduate students at the university, like a single marble drawn from an urn. To decide whether a marble is more likely to be red or green, you need to know how many marbles of each color there are in the urn. The proportion of marbles of a particular kind is called a *base rate*. Similarly, the base rate of humanities and education in this problem is the proportion of students of that field among all the graduate students. In the absence of specific information about Tom W, you will go by the base rates and guess that he is more likely to be

enrolled in humanities and education than in computer science or library science, because there are more students overall in the humanities and education than in the other two fields. Using base-rate information is the obvious move when no other information is provided.

Next comes a task that has nothing to do with base rates.

The following is a personality sketch of Tom W written during Tom's senior year in high school by a psychologist, on the basis of psychological tests of uncertain validity:

Tom W is of high intelligence, although lacking in true creativity. He has a need for order and clarity, and for neat and tidy systems in which every detail finds its appropriate place. His writing is rather dull and mechanical, occasionally enlivened by somewhat corny puns and flashes of imagination of the sci-fi type. He has a strong drive for competence. He seems to have little feel and little sympathy for other people, and does not enjoy interacting with others. Self-centered, he nonetheless has a deep moral sense.

Now please take a sheet of paper and rank the nine fields of specialization listed below by how similar the description of Tom W is to the typical graduate student in each of the following fields. Use 1 for the most likely and 9 for the least likely.

You will get more out of the chapter if you give the task a quick try; reading the report on Tom W is necessary to make your judgments about the various graduate specialties.

This question too is straightforward. It requires you to retrieve, or perhaps to construct, a stereotype of graduate students in the different fields. When the experiment was first conducted, in the early 1970s, the average ordering was as follows. Yours is probably not very different:

1. computer science
2. engineering
3. business administration
4. physical and life sciences
5. library science
6. law
7. medicine
8. humanities and education
9. social science and social work

You probably ranked computer science among the best fitting because of hints of nerdiness (“corny puns”). In fact, the description of Tom W was written to fit that stereotype. Another specialty that most people ranked high is engineering (“neat and tidy systems”). You probably thought that Tom W is not a good fit with your idea of social science and social work (“little feel and little sympathy for other people”). Professional stereotypes appear to have changed little in the nearly forty years since I designed the description of Tom W.

The task of ranking the nine careers is complex and certainly requires the discipline and sequential organization of which only System 2 is capable. However, the hints planted in the description (corny puns and others) were intended to activate an association with a stereotype, an automatic activity of System 1.

The instructions for this similarity task required a comparison of the description of Tom W to the stereotypes of the various fields of specialization. For the purposes of that task, the accuracy of the description—whether or not it is a true portrait of Tom W—is irrelevant. So is your knowledge of the base rates of the various fields. The similarity of an individual to the stereotype of a group is unaffected by the size of the group. Indeed, you could compare the description of Tom to an image of graduate students in library science even if there is no such department at the university.

If you examine Tom W again, you will see that he is a good fit to stereotypes of some small groups of students (computer scientists, librarians, engineers) and a much poorer fit to the largest groups (humanities and education, social science and social work). Indeed, the participants almost always ranked the two largest fields very low. Tom W was intentionally designed as an “anti-base-rate” character, a good fit to small fields and a poor fit to the most populated specialties.

PREDICTING BY REPRESENTATIVENESS

The third task in the sequence was administered to graduate students in psychology, and it is the critical one: rank the fields of specialization in order of the likelihood that Tom W is now a graduate student in each of these fields. The members of this prediction group knew the relevant statistical facts: they were familiar with the base rates of the different fields, and they knew that the source of Tom W’s description was not highly trustworthy. However, we expected them to focus exclusively on the similarity of the description to the stereotypes—we called it *representativeness*—*ignoring* both the base rates and the doubts about the veracity of the description. They would then rank the small specialty—computer science—as highly probable, because that outcome gets the highest representativeness score.

Amos and I worked hard during the year we spent in Eugene, and I sometimes stayed in the office through the night. One of my tasks for such a night was to make up a description that would pit representativeness and base rates against each other. Tom W was the result of my efforts, and I completed the description in the early morning hours. The first person who showed up to work that morning was our colleague and friend Robyn Dawes, who was both a sophisticated statistician and a skeptic about the validity of intuitive judgment. If anyone would see the relevance of the base rate, it would have to be Robyn. I called Robyn over, gave him the question I had just typed, and asked him to guess Tom W’s