THE MAZE, THE RAT, AND THE CHEESE:

STANDING IN LINE

By James Robert Watson, Ph.D.
THE STORY

We have to wait in line. As populations and consumerism increase, this becomes a fact of our times – we have to wait in line. We’d rather not, and we even feel excitement when we get someplace and there’s no line. These lines are called queue lines, or que lines. The origin of the name “queue” is pretty bizarre. An old British word, from the French, a queue is a braid of hair hanging down from the back of the head. That trail, or line, evolved to people waiting in a line that trailed down.

During the summer of 1969, I worked in ride operations at Six Flags in Arlington, Texas. One task was to monitor the line as people waited for the Tower elevator to the observation deck. There were two identical, mirror-image lines for the two elevators (figure A). But the elevators would travel at different speeds, and one line would invariably move slower than the other. I noticed how this frustrated some people. I also saw that, at the entrance, people were not sure which line to get into – Were they both open? Which was better? Do they both go to the same place? Since many people are sheep-like, they would follow the crowd and often would line up on one side only. We would go tell entering people that there were two lines, but that made it more frustrating, as those people would then be in a much shorter line and people at the back of the long line would see them move to the front of the que house.

So, I experimented. During the times when the que house would not fill up, I closed off one line and used a single line to service both elevators (figure B). Bingo! – it solved all the above problems. The line also moved twice as fast – it was feeding double the number of elevators. Even though the line was longer, I sensed that people didn’t mind the length as much, since they were almost constantly moving forward.

Que principle: The time waiting in line remains constant whether there is one line or two, but the movement is faster. I think we prefer that. It avoids the instances of “I always get in the slowest line.” “How come that other line is moving faster?” The single line serving multiple destinations is the fastest, fairest way to move waiting people. “Next in line, please.” At the end of the line, we positioned the host who would guide the guests into one of the two elevator holding areas.

I also moved the turnstile from the very end of the line to the second-to-the-end row. The turnstile slowed people down as they entered into the elevator, and moving it allowed people to get through it and gather in the last row. This sped up the process of boarding the elevators. Seeing that this new configuration was successful, I asked the supervisors to come take a look. I explained the rationale and let them witness the difference. They agreed, and decided to rearrange the lines in that que house (figure C). We used the whole area for a single line. It worked well.
SINGLE LINES IN STORES

I later sketched the single-line system for a grocery store. How many times have you been in line and another line moved faster, or the store opened up another register and people behind you – or who had just rolled up – go get in that line and are checked out before you even get to the cashier? Many stores do say, “Next in line, please,” or something like that.

One time, at Target, a recently-opened cashier took the person from the end of the next line. That’s just bad customer service. (I told the manager, who agreed and spoke to her.)

In 2006, I saw the single-line concept at Trader Joe’s on 14th Street in NYC, and later at Office Max in Oklahoma. They have implemented the single line – a wide aisle, with checkout impulse items displayed all along the path. Next-in-line from a single line is the fairest and most efficient system for checking out customers.

QUE LINE STANCHION POSITIONING

Often, I see the stanchions (the poles holding the ropes) positioned in an orderly fashion, but inefficiently – too much wasted space. The purpose of these stanchions and ropes is to help guide the user on where to go, to maintain a sense of order, and to create a fair environment of waiting-one’s-turn. But we humans will make the shortest path to our destination. We round the corner in a tight arc.

THE PROBLEM

Poor placement of stanchions can create longer lines and an inefficient use of floor space. We seek the shortest path to our destination. We are likely to round the corners as tightly as we can – it gets us to our destination sooner. So if the stanchions are set as in the photo above, we will round the end rope to shorten the line. This action may be partly caused by the notion that people don’t like to be corralled, to be herded like cattle. We’ve seen people duck under ropes or remove the rope to get through.

THE IMPLIED STANCHIONS AND ROPES

An interesting alternative – the rope lines are marked and embedded into the floor. Since they are just a guide to help control traffic, it seems to work. New Yorkers are conditioned and comfortable with forming lines.
SOLUTIONS

SHORT LINES

Above: While positioned in an orderly fashion, poor placement of stanchions can create longer lines and an inefficient use of floor space.
Below: An improved layout accommodates more people in the same space.

LONGER LANE

Left: 1: ‘Normal’ with longer lanes. 2: Improved long lanes.
It sure does look better, is easier to maintain, and one doesn’t have to attach or detach ropes as the length of the line varies. It does rely on humans’ integrity to make it work.

These were at the Chase bank, and it seemed to work. People obeyed, but New Yorkers are very good about waiting in line. They don’t butt, and they form orderly lines. It seems to be part of that culture.

**ALTERNATE NAMES**

- *Z line*, since the letter Z mimics the path of the waiting line.
- *Wait line* or *waitline*.
- *Next-line* or *nexinline*, as in “Next in line, please.” (“Next on line, please.”)

**Spelling** – queue, que, or q – they’re all pronounced the same.

**WORD ORIGIN & HISTORY**

French, from Old French *cue*, tail, from Latin *cauda*.

*queue*, noun.

1. A line of waiting people or vehicles: “Queue up at the box office.”
2. A long braid of hair worn hanging down the back of the neck; a pigtail.
3. Computer science: a sequence of stored data or programs awaiting processing.

**Word history:**

When the British stand in queues (as they have been doing at least since 1837, when this meaning of the word is first recorded in English), they may not realize they form a tail. The French word *queue*, from which the English word is borrowed, is a descendant of Latin *cauda*, meaning “tail.” French *queue* appeared in 1748 in English, referring to a plait of hair hanging down the back of the neck. By 1802 wearing a queue was a regulation in the British army, but by the mid-19th century queues had disappeared along with cocked hats.

Latin *cauda* is also the source of Italian *coda*, which was adopted into English as a musical term (like so many other English musical terms that come from Italian). A *coda* is thus literally the “tail end” of a movement or composition.

**After UT, Jim worked as a designer for five years in Austin and Dallas. After committing to a profession as a teacher, he went to graduate school at the University of North Texas, where he earned a 4.0 GPA for his Master’s degree and was inducted into honor fraternities. During graduate school, Jim taught high school and community college in the Dallas area. In 1987, he earned a Ph.D. degree and moved to Oklahoma, where he began teaching at the University of Central Oklahoma, specializing in creative problem solving and design.**