
Opening Extract from...

Drunk Tank Pink

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LABELS

Labels Make a Complex World Simpler

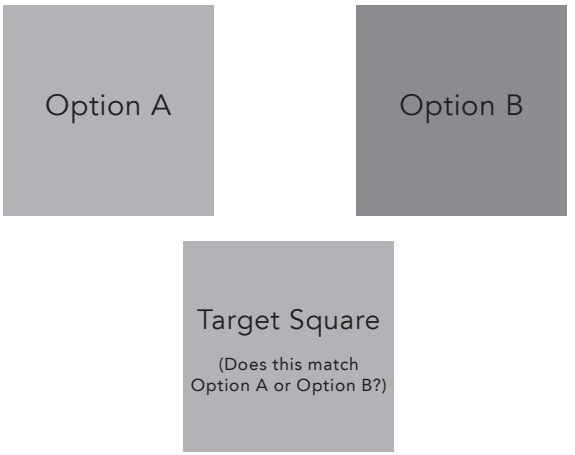
In 1672, Sir Isaac Newton passed a beam of white light through a clear prism and projected the resulting rainbow against the wall of his laboratory. He perceived five distinct colours within the rainbow, which he labelled red, yellow, green, blue, and violet. These labels pleased him for a while, but he believed that colours and musical notes shared a single structure, and that both fell along seven-step octaves. So he returned to his rainbow and decided that a thin sliver of orange fell between thicker bands of red and yellow, and that a subtle strip of indigo fell between the blue and violet bands. The resulting seven-coloured rainbow is the one we know today. Newton's detractors were unimpressed, and they debated the true composition of the rainbow for many years, sometimes claiming that Newton's prisms were cloudy, dirty, or impure, and sometimes arguing that he had seen in the prism too many colours, too few colours, or the wrong colours altogether. But Newton was no more or less right than his critics, because the colours that form the visible rainbow are part of a continuous spectrum. We see distinct colours in the spectrum, but their boundaries are impossible to measure

precisely. Regardless, why should it matter whether we use Newton's five-colour taxonomy, his seven-colour taxonomy, or some other variation? The colours don't change merely because we give them different labels, so why should we see them differently?

As it turns out, Newton's choice was far from trivial, because colours and their labels are inextricably linked. Without labels, we're unable to categorize colours—to distinguish between ivory, beige, wheat, and eggshell, and to recognize that broccoli heads and stalks are both green despite differing in tone. To show the importance of colour labels, in the mid-2000s a team of psychologists capitalized on a difference between colour terms in the English and Russian languages. In English, we use the word *blue* to describe both dark blues and light blues, encompassing shades from pale sky blue to deep navy blue. In contrast, Russians use two different words: *goluboy* (lighter blue) and *siniy* (darker blue).

The researchers asked English-speaking and Russian-speaking students to decide which of two blue squares matched a third blue target square on a computer screen. The students performed the same task many times. Sometimes both the squares were light blue, sometimes both were dark blue, and sometimes one of them was light blue and the other was dark blue. When both fell on the same side of the blue spectrum—either light blue or dark blue—the English and Russian students were equally quick to determine which of the squares matched the colour of the third target square. But the results were quite different when one of the colours was lighter blue (or *goluboy* according to the Russian students) and the other was darker blue (*siniy*). On those trials, the Russian students were much quicker to decide which square matched the colour of the target square.

While the English students probably looked at the target blue square and decided that it was "sort of lightish blue" or "sort of darkish blue", their labels were never more precise than that. They were forced to decide which of the other blue squares matched that vague description. The Russian students were at a distinct advantage; they looked at the



The task from the blue-matching experiment. On each trial, Russian and English students attempted to match a target square to two options. When the two options straddled the border between the Russian colours *siniy* (darker blue) and *goluboy* (lighter blue), Russian students were faster to match the target square to the correct option.

square and decided that it was either *goluboy* or *siniy*. Then all they had to do was look at the other squares and decide which one shared the label. Imagine how much easier the task would have been for the English students if they had been looking at one blue square and one green square; as soon as they determined whether the target square was blue or green, the task was trivially easy. In fact, an experiment published one year later showed that Russian students perceive dark blue to be just as different from light blue as the colour green is from the colour blue to English students. When Russian students located a dark blue square within an array of lighter blue squares, part of the visual field within their brains lit up to signal that they had perceived the odd square. The same brain areas were much less active when English students looked at the same array of squares—except when the odd square was green within an array of blue squares. When the colours had different

labels for the English students, their brains responded like the brains of the Russian students. We also know that the Russian students relied on these category names, because their advantage over the English students disappeared altogether when they were asked to remember a string of numbers while they were performing the colour discrimination task. Since their resources for processing language were already occupied with the task of repeating the number string, they weren't able to rehearse the names of the colours. Without the aid of linguistic labels, they were forced to process the colours just like the English-speaking students. This elegant experiment shows that colour labels shape how people see the world of colour. The Russian and English students had the same mental architecture—the same ability to perceive and process the colours in front of them—but the Russians had the distinct advantage of two labels where the English students had just one. This example is striking, because it shows that even our perception of basic properties of the world, such as colour, is malleable in the hands of labels.

The notion that labels change how we see the world predates the blue-matching experiment by almost eighty years. In the 1930s, Benjamin Whorf argued that words shape how we see objects, people, and places. According to one apocryphal tale, the Inuit people of the Arctic discern dozens of types of snow because they have a different word for each type. In contrast, the rest of the world has perhaps several words—like snow, slush, sleet, and ice. The story isn't true (the Inuit describe snow with roughly the same number of words as we do), but it paints a compelling picture: it's much harder to convey what's in front of you if you don't have words to describe it. Young children illustrate this difficulty vividly as they acquire vocabulary—once they learn to call one four-legged creature with a tail a "dog", every four-legged creature with a tail is a dog. Until they learn otherwise, cats and ponies share the same features, so they seem just as doggish as real dogs.

Cablinasians, Blacks, Whites, the Rich, and the Poor: Categories Resolve Ambiguity

Long before children began confusing domesticated cats and ponies with dogs, humans began labelling and cataloguing each other. Eventually, lighter-skinned humans became "whites", darker-skinned humans became "blacks", and people with intermediate skin tones became "yellow-", "red-", and "brown-skinned". These labels reflected reality no more faithfully than Newton's seven colours reflected the reality of rainbows, and if you lined up a thousand randomly selected people from across the earth, none of them would share exactly the same skin tone. You could arrange them from darkest to lightest and there wouldn't be a single tie. Of course, the continuity of skin tone hasn't stopped humans from assigning each other to discrete skin-colour categories like "black" and "white"—categories that have no basis in biology but nonetheless go on to determine the social, political, and economic well-being of their members.

These racial labels function in part like the colour labels that allowed Russian students to sharpen the fuzzy line that separates darker and lighter blues. They impose boundaries and categories on an infinitely complex social world, but once in place, these boundaries are very difficult to dissolve. When emerging golfing prodigy Tiger Woods appeared on *The Oprah Winfrey Show* in 1997, he claimed that he was not "black" but rather "Cablinasian", a portmanteau word combining his Caucasian, black, Native American (American Indian), and Asian heritages. In the United States, golf has long been a segregated sport, with white players relying on the expert advice of black caddies. Woods was railing against the idea that he was simply a black player breaking the mould—in his view he was a complex mix of ethnic backgrounds that were irrelevant to his prowess as a golfer.

Unfortunately, just as Russians see dark and light blue distinctly because they have different linguistic labels, people are apt to resolve racial ambiguity by resorting to racial labels. In a study conducted at Stanford University, an experimenter showed white college students the picture of a young man whose facial features made it difficult to determine whether he was white or black. For half the students, the man was labelled "white", and for the other half he was labelled "black". The students were asked to draw the image in front of them as accurately as they could, so the next participant would be able to match the drawing to the face they had just seen. To sweeten the deal, the student who created the most accurate drawing was promised a $20 cash prize. Some of the students were identified as more likely to endorse racial stereotypes, and those students showed a striking pattern in their drawings. The students who were told that the man was black tended to exaggerate his "typically black" features, whereas those who were told he was white did the reverse, exaggerating his "typically white" features. Although the students from both groups were looking at exactly the same photograph, they perceived the image through a lens that was tinted with the racial label that the researcher provided earlier in the experiment.

The term "tinted lens" borders on the literal here, as a second experiment showed that people believe the same face is darker when its owner is described as black rather than white. Here are three faces from that experiment—one depicting a black man, one depicting a white man,

BLACK AMBIGUOUS WHITE

and the middle face depicting a man who could be plausibly described as either white or black.

Which face looks the darkest? And which looks lightest? Although they're identical in tone, people perceive and later recall the face belonging to the black man on the left as darker than the face belonging to the white man on the right, with the face belonging to the racially ambiguous man in the centre falling somewhere between the two. If you cover up the facial features with your hand and focus only on the foreheads, you'll be able to see that the faces share an identical skin tone. Racial labels are so powerful that we're incapable of judging skin tone accurately in their presence.

Unfortunately, we're also incapable of ignoring social labels when assessing a person's intelligence. In 2005, then Harvard University president Larry Summers attributed the dearth of female science and engineering professors to a "different availability of aptitude at the high end". Three years later, British psychologist Chris McManus made a similar claim about working-class citizens, arguing that the working class lacked the intelligence to be doctors. It's actually very difficult to judge intelligence objectively, especially when the evidence is mixed or inherently ambiguous. In one classic study, two researchers showed that evaluators use labels as a tiebreaker when interpreting this sort of mixed evidence. In that study, Princeton University students decided whether a young Year 5 student named Hannah was performing above, below, or precisely at the level expected of an average student in Year 5. During the first phase of the experiment, the students watched one of two brief videos. In one of the videos, Hannah was shown playing in a landscaped park set in a wealthy neighbourhood. A quick sweep of her school suggested that it was modern and sprawling, graced with sports grounds and an impressive playground. While the students watched the video, they read a brief biographical report on Hannah, which mentioned that her parents were both college graduates and now professionals. This version of Hannah was associated with a series of very favourable labels:

wealth, a good school, and educated parents who were employed as professionals. The other Princeton students were acquainted with a very different and less fortunate version of Hannah. They watched a video of Hannah playing in a fenced-in schoolyard with high-density brick buildings, set amid a neighbourhood of small, rundown family homes. This time, the biographical report described Hannah's parents as high-school (but not college) educated, her father working at a meat-processing plant, and her mother as a dressmaker from home. This time the labels were portentous, suggesting that Hannah would need to overcome socio-economic and educational hurdles before attaining academic success.

At this point, some of the students watched a second video, in which Hannah was asked to answer a series of twenty-five questions from an achievement test. The questions were designed to assess her mathematical, reading, science, and social-science skills. Instead of presenting a clear image of her ability, the video was ambiguous: sometimes she was engaged, answering difficult questions correctly, and sometimes she seemed distracted and struggled with relatively easy questions. The tape was designed to baffle the students, to leave them without a clear picture of her ability.

Hannah's ability was difficult to discern from the video, but some of the students began watching with the labels "wealthy" and "college educated" in mind, whereas the others began watching with the labels "working class" and "high-school educated" in mind. These labels functioned as tiebreakers when Hannah's performance was neither flawless nor disastrous. The students who expected Hannah to succeed saw exactly that pattern of achievement in her responses (ignoring her missteps and distractibility), whereas those who expected less from Hannah saw exactly what the negative labels implied (ignoring her intermittent engagement and mastery of the difficult questions). In the end, the lucky Hannah was judged to have performed above Year 5 level, whereas her unlucky counterpart seemed to perform below Year 5 level. The Hannah study showed that people are suggestible, willing to view the world

with the guidance of labels when faced with an otherwise unbreakable tie.

Labels and Associations: why Black and Working-Class Categories are Dangerous

Social labels aren't born dangerous. There's nothing inherently problematic about labelling a person "right-handed" or "black" or "working class", but those labels are harmful to the extent that they become associated with meaningful character traits. At one end of the spectrum, the label "right-handed" is relatively free of meaning. We don't have strong stereotypes about right-handed people, and calling someone right-handed isn't tantamount to calling them unfriendly or unintelligent. In contrast, the terms "black" and "working class" are laden with the baggage of associations, some of them positive but many of them negative. When a person is labelled "black", we're primed to perceive the characteristics that we tend to associate with "blackness" more generally, which is why students drew racially ambiguous faces with typically black features when they were told the face belonged to a "black" person. Participants in the experiment at Princeton similarly associated Hannah's working-class background with diminished intellect, so they tended to emphasize her failings and overlook her strengths when they watched her complete an academic test.

Sometimes, meaningless labels accidentally acquire meaning. By convention, world maps place the Northern Hemisphere above the Southern Hemisphere, though there's no inherent reason to equate cardinal direction with vertical position. Greek astronomer Ptolemy decided that maps should place north above south, possibly because the known world was clustered in the Northern Hemisphere. Naturally, then, the undiscovered parts of the world should lie below the superior, charted territory

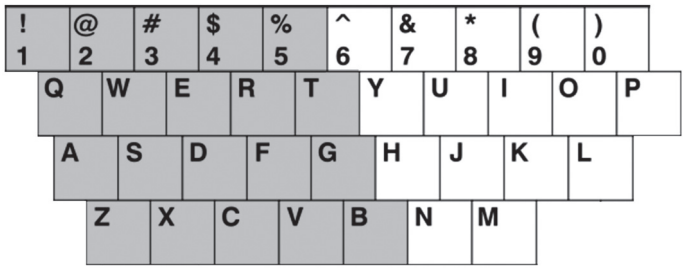
that constituted the civilized world. Over time, people have come to conflate the two directional systems, perceiving north as above and south as below a central reference point. This association might be trivial if it didn't have commercial consequences. In one experiment, for example, people believed that a shipping company would charge $235 more to transport goods between two locations if they were making the trip from south to north rather than north to south. The reason: the northbound trip seemed "uphill", requiring more effort and possibly more petrol. A second group of people were more willing to drive to a shop located five miles south of the city centre rather than a practically identical shop five miles north of the city centre, again because reaching the northerly shop seemed to demand more effort than did reaching the southerly shop. Meanwhile, a third group preferred to live in the northern part of town, presumably because its "elevated" location rendered it superior to the town's southern suburbs.

In theory, these associations are mutable. Had Ptolemy decided to place Greece, his home, along with the rest of the Northern Hemisphere, on the bottom half of the map, perhaps people would prefer the northbound journey to its more onerous southbound counterpart. In 1979, a young Australian named Stuart McArthur proposed an alternative to the dominant Mercator world map projection: McArthur's Universal

Corrective projection. According to the McArthur map, Australia was restored to its rightful place, both above *and* south of the world's remaining land masses, much like the map on the previous page.

McArthur's map failed to replace the canonical north-above-south projections, but it's hard not to wonder whether children raised under the McArthur system might prefer the ease of heading north to the labour of heading south.

Almost 150 years ago, long after Ptolemy decided that the Northern Hemisphere should lie above the Southern Hemisphere, the Remington company bought the rights to a new typewriter. Instead of placing the letters alphabetically, along three horizontal rows beginning with A and ending with Z, the new layout began with the letters Q-W-E-R-T-Y. The QWERTY keyboard, as it became known, is now the world's dominant keyboard layout. The QWERTY layout was designed to separate frequently used letters, which tended to jam during bouts of rapid typing.



One accidental consequence of introducing a standard keyboard was that millions of computer users would type certain words using their left hands and other words using their right hands. For example, *abracadabra*, *referrer*, and *stewardesses* are left-hand words, whereas *lollipop*, *loony*, and *monk* are right-hand words. (In the keyboard image, the left-typed keys are highlighted in grey, and the right-typed keys are white.) Some words straddle the left–right divide, but you can quantify the right-dominance of every word by subtracting the number of left-typed

letters from the number of right-typed letters. It turns out that, since people prefer typing with their dominant hands and most of them are right-handed, they come to prefer concepts with right-dominant labels. In other words, when you ask English-speakers to indicate how much they like real words (or even nonsense words like *plink* or *sarf*), they tend to prefer the words with more right-hand letters than left-hand letters. This effect is especially true for words that were coined after the advent of the QWERTY keyboard—including *n00b*, *yucky*, and *woohoo*. These letter strings are often typed, strengthening their association with the pleasing experience of right-handed typing or the relative difficulty of left-handed typing, so it's not surprising that they show stronger QWERTY effects. Like Ptolemy's decision thereafter to link the northerly direction with upward movement, Remington's adoption of the QWERTY keyboard thereafter consigned words like *wart* to the pile of disliked left-typed words, and anointed words like *punk* to the pantheon of liked right-typed words.

These studies are more than idle curiosities because they tell us something about how racism and prejudice come to infect the adult mind, and how we might prevent them from taking root in the minds of young children. After looking at hundreds of maps that place north above south, adults struggle to shake the notion that north inevitably sits above south. Likewise, adults live in a world that repeatedly pairs race with personality characteristics, so those racial labels are inextricably bound to character traits. Those damaging racial associations haven't yet had time to harden into unshakeable truths for children, so their young minds remain open to other possibilities.

During the height of the civil rights struggle, one astute teacher showed just how willingly children adopt new labels. On 4 April 1968, Martin Luther King Jr was murdered, and the next day thousands of young American children went to school with a combination of misinformation and confusion. In Riceville, Iowa Stephen Armstrong was the first student to arrive at teacher Jane Elliott's Year 4 classroom. As the