

# Outliers by Malcolm Gladwell

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## 1 Introduction

In the early 1800s, villagers from Roseta in Southern Italy migrated to a place near Bangor, PA USA. They created a prosperous community for themselves in their new land. It was later observed that they suffered from no diseases such as heart disease etc. when older. No cause could be found. Stewart Wolf, a physician from a nearby town posited that it was because the Rosetans lived a very socially active life (multi-generation families living under one roof, people stopping to chat in the street etc.). He then had to convince the medical community which at the time considered genes, diet, etc. to be the only determinants of longevity, that the culture humans create for themselves can also influence the length of their life. Gladwell aims to similarly transform the reader's understanding of success—that it is not only determined by individual choices and actions but also by the prevailing cultural conditions.

## 2 Rice Paddies and Math Tests

Rice paddy cultivation is difficult and requires a lot of care. Rice is planted on terraces carved into hillsides. It needs a clay floor upon which soil and manure is loaded and into which the rice is planted. It needs proper irrigation for which canals must be built so that optimal water level can be precisely maintained.

Pronouncing words for numbers in Eastern languages such as Chinese takes a significantly shorter time than pronouncing them in English. As a result, Chinese children can hold more numbers in their short term memory. Furthermore, number terms and phrases are more literal and regular in Chinese than in English. For example, the number twenty three is expressed as two tens three in Chinese. Therefore, Chinese children have a slight edge when it comes to arithmetic because it is arguably easier to add three tens seven (37) to two tens two (22) than it is to add thirty seven to twenty two. This may explain why children in China and other far-eastern countries do much better in math (percentiles in the high 90s) than children in the west (percentiles in the 30s). Thus, being good at math may also have some explanations that have to do with language in particular and culture in general.

Could this be because far easterners were rice paddy farmers? Many Chinese families survived on a tiny piece of land (compared to acres of farmland in the midwestern USA). Moreover, rice paddy farming is more labor intensive than farming many other

crops including wheat and corn. The rice paddy, however, requires smart work and this smart work directly translates into a higher yield. The care required also prevented a feudalistic system from taking root in China: farmers got to keep the extra yield after they paid their rent to the land owner. This incentivized the rice farmer to work harder. And this hard work created meaning for the eastern rice paddy farmers despite their poverty.

A student Renee is given a computer program that plots lines (passing through the origin) in the plane on a computer screen when Renee enters a slope. Renee tries to plot a vertical line but cannot figure out what slope to input into the program. She experiments for over twenty minutes before realizing that for a vertical line, the concept of a slope is meaningless. Schoenfeld (a professor at Berkeley) recounts this incident and observes that often it is not ability but attitude that determines one's skill at mathematics: Renee did not just give up but searched for an explanation until it all became clear.

On an international math test, there is a questionnaire that is to be filled out by students. The questionnaire is so long that many leave several questions unfilled. Turns out that the ranking of countries on the math test is identical to the ranking of countries by number of questions filled in. Thus, there is correlation between how hard and long one is willing to work on something and their ability at mathematics. In another incident, young students were given a difficult puzzle to work on. American students worked on it 40% shorter than Japanese students. All this might be because eastern cultures (such as those of China, Japan, Taiwan, South Korea etc.) were rice-paddy farming cultures which engendered a culture of hard work and an optimism that it is all worth it and will eventually pay off.

### **3 Marita's Bargain**

KIPP (Knowledge Is Power Program) middle school in South Bronx / NY city chooses students at random from the poor bronx neighborhood and yet when these students graduate, they are extremely well-trained in mathematics. Studies show that poor students in schools elsewhere in the USA are failing poor students not because they are less capable of learning or because the schools are failing to teach them, but because they lose out on reading skills during the long summer vacations. During vacations rich kids have enough resources to continue learning (e.g. books, summer camps etc.) but poor kids actually unlearn things they have learnt in school the previous year. Schools in the eastern world have shorter vacations—another reason why eastern students might do better at mathematics. A KIPP school day runs from about 7 to 5 and 8 to 2 for three weeks in July. The extra time helps students learn slowly and ask questions. The description of Marita's day at the KIPP school shows that students are getting a good bargain. Marita, like half of her classmates, wakes up at 5:45am and works on her homework until 10pm after returning from school after 5pm. In return, the KIPP school promises to push her above her grade in mathematics and, like many of her senior schoolmates, ensure a scholarship for further education all the way upto college.