# Thumb-Dependent Culture and The Koalas

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Today cell phones are so commonly used that probably the inventors of cell phones also could not predict this. Our daily activities using cell phones besides the obvious speaking and hearing, include sending text messages, recording voice mails, reading received texts, playing games, listening to music, using navigation systems (global positioning system), using calculators, taking pictures, using alarm clock, voice and video recording, using daily planner, surfing the web, etc. While using our cell phones in these various ways, our fingers, specifically the distal phalanx of our thumbs and tendons of the distal interphalangeal joints, work the most. Using thumbs, we can use our cell phones with only one hand. If we did not have thumbs, we could not use cell phones without using both hands. In other words, we could say that cell phones are designed with *the presumption of healthy thumbs*. If humans did not have thumbs, cell phones would most likely still be invented but would certainly have been designed differently. However, with this article we would like to remind how it is possible for us to use a device that is included in our lives this much.

It is true that cell phones could not be used without a thumb; however, without the remaining four fingers and having only thumbs would not make it possible to use cell phones either. We could safely say that using cell phones is possible only if one is able to do opposition. *Opposition* describes the movement when the pulps of fingers of the hand are opposed to the pulp of the thumb.

While using cell phones, we hold the device in between the thumb and the other four fingers. Considering how the thumb moves, we see that in addition to a healthy pulp, speedy flexion and extension movements with distal *interphalangeal joints* are also essential. Now that there is a widespread option of touch screen cell phones, index fingers could be more effective for using cell phones. While expecting new technological developments in this area, our thumbs and flexor pollicis longus tendons are exhausted the most for now.

*Flexor pollicis longus* tendon is the connective tissue between the flexor pollicis longus muscle and distal phalanx. When we think of the tendon as an extension to the muscle, muscle starts from the central anterior of the radius and ends near the distal phalanx of the thumb close to the joint. The muscle is innervated by the interosseous branch of the median nerve. The only muscle that affects the flexion movement of the interphalangeal joint of the thumb is the musculus flexor pollicis longus. The extensor pollicis longus muscle is the muscle that helps the interphalangeal joint doing extension. This muscle

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has neural support from the posterior interosseous nerve of the radial nerve. The extensor pollicis longus muscle starts around mid-ulna and ends close to the distal phalanx near the joint on the dorsal side (1).

Other than healthy extensor and flexor pollicis longus tendons, healthy distal interphalangeal joints are of great importance in using cell phones today. To type *'hello'* and send this as a text message, 25 opposition movements by the distal interphalangeal joints need to be made. This number may change by the phones features and the users skills.

While depending on the shape of the phone as well; when holding a phone with a healthy hand, we see that the amount of flexion four fingers (excluding the thumb) gradually increases (Figure 3). When a cell phone is used with one hand, the thumb constantly moves. In this case, the sole function of the remaining fingers is to help keep the phone steady. Thus, at least 10 muscular movements are made while picking up the phone with one hand and pressing the answer button.

The thumb is the most active finger using cell phones; however, the case is reversed when using computers. Although there are a lot of movements while pressing different keys and buttons, the pulps of our fingers are the only parts of our bodies touching the devices. The skins on the sole of the feet provide contact to the ground, as the pulps of the fingers do to devices with various digital buttons. To emphasize the importance of pulps, it is even said *the pulps are extensions to the brain* (2).

It is common among health care workers to cut or wound the flexor pollicis longus tendon while breaking the injection ampoules open. Therefore, to prevent such undesirable results, it is not advisable to force the thumb too much while opening these ampoules (3).

According to Ahmet Hasim, one of the greatest contributors to the Turkish literature (1844-1933), the reason that wild animals are not able to build cities is not because of *the lack of intelligence* but because of *the lack of thumbs*. He even took his argument further by claiming that the United States power is *a success of thumbs* rather than a consequence of intellectual activities. Intelligence is closely connected to arrogance he argues; so instead of bragging about our intelligence, we should focus on things to achieve with our thumbs (4). There are some religious books referring to the importance of thumbs as well (5). In this particular

FIGURE 1: Koalas have two thumbs (Picture from Google images).

FIGURE 2: Thumb duplication on humans is known as preaxial polydactyly and treated by the removal of the non-dominant thumb.

FIGURE 3: The main factor on the emergence of a term called thumb culture is certainly cell phones.

book, the author stresses out the convenience of the thumbs location and illustrates which movements could not be done if thumbs were differently and abnormally located.

Medical scholars like us could see that, with his remarks on thumbs Ahmet Hasim refers to showing effort and working by physically and not the anatomical features of the thumb. It seems highly possible that Ahmet Hasim is unaware of *koalas* and their anatomical features. Like him, we have not been in the same environment as koalas, but we know from the Internet and television that koalas have not one but *two thumbs*. Despite having two thumbs, there are no cities on earth that the koalas have built. This proves that without intelligence, having thumbs alone and even twice the number that humans have cities cannot be built (Figure 2). Perhaps, the existence of healthy thumbs and a healthy brain together is more valuable. We occasionally come across thumb duplications on patients due to some anomalies. However, this type of duplications causes trouble with activities rather than being helpful. Therefore, we help patients by amputating the less active and non-dominant thumb in the plastic surgery clinics. In other words, we consider people with multiple thumbs as patients. This is the case with humans; however, a koala having two thumbs is not an anomaly as they have two thumbs and three other fingers anatomically. Thus, the first and the second thumb serve different purposes and they exercise harmonically (6).

*Pandas* have a thumb-like limb on the radial side, which is actually an overgrown sesamoid bone and called pseudo-thumb by some scholars. However, besides being underdeveloped to be called a thumb, it also cannot do opposition (7).

Pat Brewer, who wrote the preface for Engels The Origin of the Family, Private Property and the State, thinks opposable thumbs are of great importance among many other things in the evolution process (from monkeys to humans) (8). It becomes evident that people discussing such issues on species are also unaware of koalas being able to do opposition and having two thumbs on each paw.

Peter Glotz, who wrote the preface for Thumb Culture: The Meaning of Mobile Phones for Society argues that the international feature of cell phones today creates *a thumb culture*, although his remarks are likely to be used for different purposes by Rene Obermann (9).

As we were doing our research for this article, we came across a paper expressing the disadvantages of having thumbs. The paper covers the techniques and history of *piano playing* and states that until Bach, thumbs were left out while playing the piano, leading to an *eight-finger technique*. However, after Bach, the usage of thumbs started and a *10-finger* piano-playing technique developed (10). This information on music history surprised us, since we know that thumbs contribute to approximately 40% of all hand functions (11).

Trigger thumb is a disorder that could be congenital, could arise during adolescence or even in old ages (12). It is quite interesting that with todays common usage of cell phones, very active thumbs, and exhausted flexor pollicis longus tendons, we did not notice an increase in trigger fingers.

We are hoping that one day there will be cell phones we could run and operate by mere visual commands. But until that day comes, we need and depend on our thumbs.

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