

City Talk

Brace for life with your pearly whites

Viewed from an engineering perspective, many parts of the human body are like pieces of machinery or building structures. Take our teeth for example.

Its layout is like a row of buildings on a solid foundation, staying up for many decades and serving a basic need of all living things—nutrition.

We have incisors, canines, premolars and molars, all of them like a set of tools with different functions, capable of cutting, tearing and chewing food before swallowing.

The first two have pointed tops and a single root while the latter two have flat tops and more roots, each designed for a specific purpose.

Each tooth comprises the exposed crown, the neck surrounded by the gum, and the root embedded into the jawbone.

Like a complex machinery, the tooth is not made of a homogeneous piece of materials.

The outer layer of the crown is the enamel, which is made up of calcium phosphate crystals, the hardest material in the human body.

Enamel cannot grow or repair itself when broken or damaged.

A layer of dentin, which is also harder than bone but softer than enamel, extends from below the top layer of the crown to form the neck and root.

Dentin encloses the inner pulp cavity of connective tissues that extends to the root canal, where blood vessels and nerves are housed.

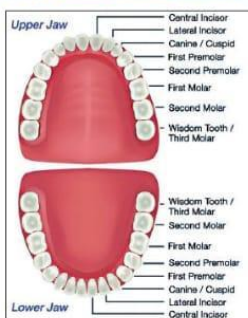
The root connects the tooth to the jawbone with a thin membrane of periodontal ligament in between.

This complex system allows a slightly flexible foundation such that the tooth can withstand stresses when chewing.



Nuts and bolts

Edmund Leung



The 16 upper and 16 lower teeth form the complete set of teeth for grown-ups.

They are laid out in an arc and each tooth is placed very close to the next to provide lateral support, like a row of townhouses, so they can all stand upright.

Due to many reasons, when children grow up, this set of teeth may not align perfectly.

To ensure oral health and allow effective cleaning, dental surgeons these days often advise children to use braces to align them.

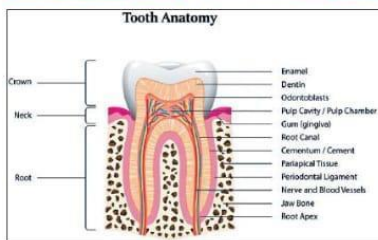
This ensures that their teeth perform as nature intended them to and can be cleaned effectively without holding too much food residue in irregular crevices.

It also gives a more pleasant look, especially when smiling and helps them speak properly.

The process of using braces to align a mouth is a complex operation.



A shining example of what a little dental work can do for one's confidence can be seen from Princess Eugenie, seen at far left with braces in 2006 and sporting a broad smile 18 years later at the Ascot racecourse in June. AP, REUTERS, ONLINE



After a careful inspection and assessment, the orthodontist first glues a bracket to each tooth after thoroughly cleaning it.

A stainless archwire is then threaded to link up these brackets and a carefully planned amount of tension is applied to pull the teeth gradually in line.

An elastic band is often used to cover the archwire to help it stay in position, allowing the person to continue to eat and drink as usual.

The gentle but continuous force applied through the wire is transmitted to the tooth's root.

The pressure on the periodontal ligament alerts the immune system to release acid and proteins to dissolve the stressed parts of the jawbone slowly to allow the slight repositioning of the teeth.

With the intended repositioning of the teeth, the pressure on the periodontal ligament is then released and the immune system will follow up to rebuild the affected parts of the jawbone with a supply of minerals that harden to form a solid foundation for the repositioned teeth.

This is almost like sending a renovation contractor to one's house to knock

down some obstructing partitions and rebuild them after furniture and fixtures are relocated to their final positions.

The bracing operation is a continuous process, performed by orthodontists at monthly intervals, adjusting the tension of the archwire and checking the positions of each tooth to slowly pull it to the desired alignment.

To ensure teeth stay in the new position without moving back, a retainer is worn for a few more months to ensure the teeth have firmly settled in the jawbone before the bracing process is finally complete.

As we can see, a lot of medical processes are also backed up by engineering principles and applications.

Engineers see problems and apply the most effective solution to resolve them, helping to improve our daily life.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over features of modern life

Documentary shows village thriving amid creeping modernity

CULTURAL EXCHANGE
BERNARD CHARNWUT CHAN



Amid the hustle and bustle of our vibrant urban lifestyles, it's easy to overlook hidden gems that showcase our rich cultural heritage.

One example is Kwu Tung village, which preserves its unique blend of traditional village life while battling against encroaching modernity.

It is located west of Sheung Shui and Fan Ling and east of Lok Ma Chau and San Tin at the crossroads of rural Hong Kong and the bustling Greater Bay Area.

Filmmakers Daphne Mandel and Guy Bertrand uncovered this hidden



A soy sauce maker is filmed at work in Cha Guo.

gem several years ago. Their subsequent research lasted almost a year as they gradually got to know the village and were seen by the villagers as friends.

Their documentary film *Cha Guo* captures the essence of a community

facing change, highlighting its resilience and the impact of technology on daily life.

The filmmakers set out to document the village's physical beauty but also, equally important, the spirit within the small community.

They closely examine the lives of this community of artisans, farmers and entrepreneurs who reflect a commitment to resilience and innovation and embody the true spirit of the people of Hong Kong.

The villagers showcase unwavering determination to thrive amid change.

By highlighting the richness of the village's cultural heritage and artisanal practices, such as the thriving production of soy sauce using century-old clay pots or the craftsmanship of a local artisan who creates concrete spacers for some of the world's longest suspension bridges, the documentary showcases the vital role of local artisans in modern society.

It seeks to honor these often-overlooked individuals and highlight the enduring spirit of Hongkongers.

Mandel and Bertrand highlight the depth of Kwu Tung's cultural heritage by showcasing its traditional practices.

The documentary explores multiple facets of village life, honoring this closely knit community's contributions and age-old practices.

The film was shot on a professional cinema camera but utilized iPhones in multiple scenarios.

This process provided flexibility and allowed the filmmakers to capture spontaneous moments and enrich the narrative.

Cha Guo invites viewers to appreciate the complexities of rural communities and the resilience of their inhabitants.

Through innovative storytelling and a commitment to authenticity, the documentary, which recently premiered here, aims to inspire curiosity about Hong Kong's diverse cultural heritage and the timeless values that connect its people across generations.

Bernard Charnwut Chan is chairman of Tai Kwun Culture & Arts Co Ltd