Mashup Destinies

written by Kóan Jeff Baysa M.D.

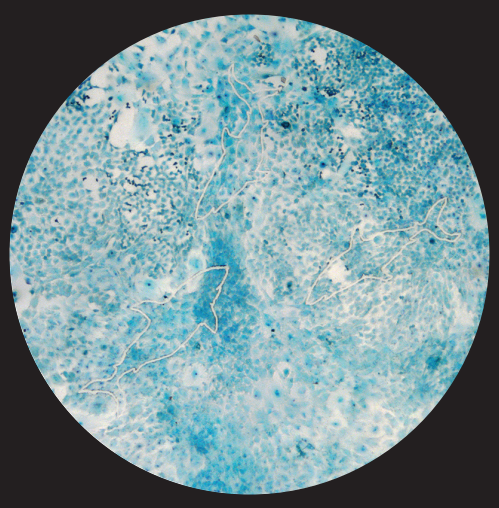
To conflate the primary concepts behind David Khang's individual exhibitions in two different venues in Vancouver BC was a challenge. As men of both science and art, we fully appreciate the difficulties as well as the triumphs of bringing the two seemingly disparate fields together and to demonstrate that art and science indeed share core concepts: a methodology of approach in the search for essential truths, experimentation fueled by genuine curiosity, and a sense of wonder.

At the core of *Amelogenesis Imperfecta (How Deep is the Skin of Teeth)* in grunt gallery's Media Lab is a dramatically stage-lit laboratory-like setup reflecting Khang's experimental biological research during his 2010 residency at the SymbioticA Centre of Excellence in Biological Arts, University of Western Australia in Perth, that brought together his commingled interests and training in contemporary art and dental science.

At the heart of *Beautox Me* in the other venue, the CSA Gallery, are video portraits of two actors reciting selected excerpts of Shakespeare, before and after specific facial administrations of Botox. In 2009, British Columbia became the first province in Canada to license dentists to administer botulinum type A injections "for oral-facial purposes." An injection of Botox, derived from the bacterium Clostridium botulinum, into specifically targeted facial muscles temporarily paralyses them for approximately 3-4 months.

In the Australian preparation for the grunt gallery Media Lab exhibition, epithelial and mesenchymal cells were harvested from an unerupted porcine tooth bud to explore the potential of growing enamel in vitro to produce sculptures of dental-origin tissue seeded onto a synthetic collagen-based bioscaffold. When the original project fell short of its original objectives, the epithelial cells, which were expected to differentiate into the enamel-producing ameloblasts, were seeded one cell thick onto glass slides and artfully etched with a laser with images of sharks on one microscope slide and with the following tiny inscriptions, one each on the other two slides: What is the smallest measure of life? and How deep is the skin of teeth?

The first design was the most difficult to execute, as the entire sentence was inscribed within one cell unit. It begs discussions on what constitutes the measure of



viability. For example, are prions alive? These infectious agents are smaller than viruses, consist of proteins in misfolded forms, and are devoid of both nucleic acids DNA and RNA.

A reference to the second inscription first appears in English in the Geneva Bible, 1560, in Job 19:20, which provides a literal translation of the original Hebrew, meaning "barely": "I haue escaped with the skinne of my tethe." The "skin" reference could well be the thin tooth coating of enamel, the hardest substance produced by the human body, and the thinness of the enamel may account for the phrase's meaning of "narrowly."

Sharks have a skin covering of dermal denticles that protect their skin from damage and parasites and add to their streamlining. In reality, individual denticles are miniature, modified teeth with an inner core of pulp containing blood vessels and nerves covered with dentine that in turn is encased by hard enamel. With these surface properties, sharkskin was previously used like sandpaper.

An estimated 73 million sharks are killed each year for culinary (shark fin soup) and medicinal (remedy for impotence) ends. In Asian medicine, shark fins held alleged powers of increasing qi, preventing heart disease, and lowering cholesterol. It was once believed that ingesting shark cartilage was a potential cure as well as a preventive measure for cancer.

One does not ordinarily mention the Bard and sharks in the same breath, but indeed the cartilaginous fish and elasmobranch was cited as an ingredient for the witches' potion in Macbeth, spoken by the third witch:

"Scale of dragon, tooth of wolf,Witches' mummy, maw and gulf,
Of the ravin'd salt-sea shark."

Four elements, dramatically staged and lit and presented as a scientific laboratory, comprise the exhibition in grunt's Media Lab: A slide presentation on a large flat-screen monitor shows the paraphernalia in the Australian lab used in the attempts to grow enamel, including detailed images of a harvested porcine tooth bud, dermal denticles, and the two phrases and shark drawings laser-etched on tissues mounted on microscope slides. The minuscule drawings were done with a precise cutting laser under magnification at the Centre for Microscopy, Characterization and Analysis, University of Western Australia. They are invisible to the naked human eye, visible only under a microscope.

Secondly, the sandpaper-like skin of the dogfish shark Squalus acanthius from Australia is laid out, fixed, and displayed like a scientific specimen or, in an alternate reading,

the hide of a trophy animal.

The animation of an autophagic human molar, with three roots gradually spinning and morphing into a shark that swims around and ultimately engulfs the viewer, is projected from the ceiling down onto a pool of black ink in which it appears to be swimming. It also serves as an anthropomorph exemplifying the belief in the aumakua, or shapeshifter Hawaiian family god, often a shark-man—a deified ancestor that often appears and intervenes to save descendants from harm. Sensationalised shark attack movies drove groups to retaliate such episodes with irrational shark hunts and shark killing. However, the effective protests against this bloodthirsty practice, especially in Hawaii, were based on beliefs in the aumakua.

The evolution of the articulated jaw structure and associated facial musculature that reflects emotions, notably the smile, brings both shows together. Incidentally, the jaws of sharks are not attached to the cranium. Shark teeth are rootless and are embedded in the gums rather than directly affixed to the jaw, easily lost when feeding, and need to be constantly replaced throughout life. It's said that it takes 43 human facial muscles to frown but only 17 to smile.

"That one may smile, and smile, and be a villain—At least I am sure
it may be so in Denmark." -- Hamlet Act 1, scene 5, 105–109

The subject of the smile embraces the grinning Cheshire cat, the enigmatic grace of La Giaconda, and the ruminations of the Danish prince. The exposure of teeth, which bears a resemblance to a smile, is often used as a threat or warning display. In Bali, bad spirits are identified on the basis of sharp teeth, so humans with pointed incisor teeth have them ceremoniously filed flat to connote a good spirit. In humans, a toothsome smile is a demonstration of healthy oral hygiene and overall health, while gingival recession gives rise to the saying "long in the tooth" associated with advancing age and periodontal disease.

"Oh, the shark, babe, has such teeth, dear,
And it shows them pearly white" -- Mack the Knife

It's little known that the song, The Ballad of Mack the Knife, was originally Die Moritat von Mackie Messer, based on a medieval murder ballad, and composed in 1928 for The Threepenny Opera by Kurt Weill and Bertolt Brecht. The character Mackie Messer was based on the dashing highwayman Macheath in The Beggar's Opera who in turn was based on the historical thief and glorified escape artist Jack Sheppard. The anthropomorphism of villains as sharks, cold-blooded and ruthless, is perpetuated in feeding frenzy behavior: delirious feeding by sharks that bite and devour anything within close range, including each other. Some reports describe sharks attacking each other, continuing to feed even after they've been disemboweled and partially eaten by fellow sharks.

In the spare and effective presentation in the CSA space, the contrarily entitled show, Beautox Me, recalls the 1800's research in electrophysiology on the smile performed by French neurologist Guillaume-Benjamin-Amand Duchenne de Boulogne. While this scientist photodocumented his pioneering studies on the physiology of emotion through methodical faradic shocks of human faces, Khang deploys video takes to contrast and compare the faces of two actors as living human sculptures undergoing aesthetic-artistic interventions with Botox.

In the era of High Definition television in which every imperfection of the skin is glaringly revealed, spray-on makeup that holds up under harsh studio heat and light, in addition to skin-ironing botulinum toxin injections, are the actors' best friends. Botox has found a new market in stressed-out Wall Streeters who wish to present a falsely calm line-free game face. Those with the flat affect of schizophrenic catatonia need not worry about wrinkles; the lack of emotional facial expressions totally spares them and they have enviable wrinkle-free, although emotionless, mask-like faces. It's curious that the synthetic

collagen-based bioscaffold originally destined to be covered in enamel was the mask of a human face. A self-limited semifacial paralysis occurs with Bell's Palsy, the most common mononeuropathy, a unilateral facial nerve paralysis resulting from a dysfunction of Cranial Nerve VII, the facial nerve that results in the inability to control facial muscles on the affected side. The outward appearance is that of a half-paralysed face with the inability to raise the eyebrows, wrinkle the forehead, close the eyes completely or smile symmetrically.

While conducting research on the physiology of facial expressions in the mid-19th century, the French doctor identified two distinct types of smiles: a Duchenne smile involves contraction of both the zygomatic major muscle that raises the corners of the mouth and the orbicularis oculi muscle that raises the cheeks and forms crow's feet around the eyes. A non-Duchenne smile involves only the zygomatic major muscle. Research with adults initially indicated that the facial expression of joy was characterised by a smile that raises the corners of the mouth by the zygomatic major muscle. More recent research suggests that a smile in which the obicularis oris muscle around the eye contracts and raises the cheeks high, a Duchenne smile, is uniquely associated with positive emotions.

Using a 31-gauge needle, Khang injected Botox into the glabellar and forehead facial muscles of two actors: Billy, a 35-year-old Russian-Ukrainian male, and Lesley, a 50-year-old Jamaican-Scottish female. They were asked to pose for pre-injection and 2 weeks post-injection video footage while reciting highly emotive and affective Shakespearean monologues that maximally and dramatically impacted their facial expressions, with the goal of underscoring the effects of the paralysing toxin.

Lesley, the female actor, recites Marcus, Titus's brother and the tribune of Rome, from Shakespeare's Titus Andronicus, the Bard's first tragedy and his most graphically grisly work. The cycle of violence and revenge in the play is endless and marked by cannibalism, rape, mutilation and other atrocities.

Billy recites the porter's speech from Macbeth, a clumsily, drunkenly delivered discourse providing comic relief while underscoring its tragic significance. The similarity of the name of the aforementioned Threepenny Opera's Mack the Knife character, Macheath, to Shakespeare's Macbeth does not go unnoticed. Billy takes on a second passage: a soliloquy from the play's opening speech in Richard III, where the king reflects on the facial disfigurements that mirror his own inner disfiguring (not included in this exhibition). Richard tells us he was born…

"Cheated of feature by dissembling nature,
Deformed, unfinish'd, sent before my time
Into this breathing world, scarce half made up …"

In the two-channel installation of Beautox Me, the HD video portraits are presented on large opposing flat screens in the narrow and intimate gallery space. Separated by a two-week period, the images are pre- and post-Botox injections. In the second delivery of the passages, the induced facial muscle paralysis ironed out and flattened the crow's feet and prevented narrowing of the palpebral fissures of the Duchenne smile, stripping the upper faces of emotive creases, leaving the voice inflections alone to transmit the ranges of affects. The viewer is flanked by the seemingly mirrored large video images of the male and female actors presented successively, until ultimately realising the contrasting physiognomic differences between the simultaneously presented images of each actor speaking his and her lines.

As published in Forbes and originally in the Journal of Social Psychology and Personality Science, Botox takes away or dampens the emotional feelings in a particular situation: "The mental effects of Botox may extend beyond emotional feelings to the ability to understand language about emotions." An experimental study suggests that cosmetic use of botulinum toxin for treatment of glabellar lines affects human cognition. As reported in the L.A. Times, subjects were asked to read emotional sentences before and two weeks after Botox injections in the corrugator supercilii muscle used in frowning. Reading times for angry and sad sentences were longer after Botox injection than before injection, while reading times for happy sentences were unchanged. This finding suggests that facial muscle paralysis has a selective effect in human cognition, and indicates that Botox hinders the ability to understand language. According to the lead researcher in this study, "Botox causes a kind of mild, temporary, cognitive blindness to information in the world, and to social information about the emotions of other people."

While Khang's dramaturgical exercise has an *n* of just 2, Billy's articulate and rueful post-Botox ruminations are in contrast with the actor's depressed facial musculature and demonstrates increased rather than blunted cognition and self-reflectivity:
"If I hold my face in a frown long enough, will it eventually make me feel sad? Is this true sadness? What am I so sad about? Where does the emotion come from? If I feel angry, and I force myself to smile, will it eventually turn anger to joy?"

The male actor continues: "there is a certain power one gains from this immobilized mask. It prevents one from showing emotions that, esapecially for a man in this culture, is generally seen as a sign of weakness. I think I have in the past been made fun of for being too emotive in everyday life. I've never had a good poker face. Perhaps this helps me look more masculine, and better at bluffing. Perhaps it makes me a better liar. A thing like Botox is a way for people to try to deny aging, and death. The porter mocks these vain attempts at self-preservation and reminds us of our own mortality."

Lesley, the female actor, had a critical medical link to the changes that she underwent with the injections:
"I really hoped it would release the ongoing spasming in my face and head and neck. It's been plaguing me, relentlessly, for over half a decade. I've been unable to relax certain parts of my facial musculature and the frowning has been almost uncontrollable. I have brain injury. It's healing. But it has had a deeply deleterious effect on my ability to learn lines (the whole complex mechanism) and my confidence in my skills. I mention this because this was a major factor in choosing which monologue to work with. I had learned Marcus' speech from Titus Andronicus when playing the part prior to my injury: it had been deeply seated in my synapses before they were compromised. I also chose it because the emotions of horror, shock and distress and the gradual series of realizations I ran through while performing it "ex-pressed" themselves into my face in the form of deep furrows throughout my forehead. Perfect!"

As an actor, she felt that the Botox razed her landscape of emotions, saying:
"My forehead doesn't correspond to my emotional state with the same creasing and folding activity … My mask has been neutralized … Do I appear false? I'd mourn for my previous faculties of expression, for how deftly I'd cock a brow or narrow the outer corner of an eye, slowly raise half my forehead and draw back the skin on my head in order to appear to grow younger right before your eyes. After years spent parsing and developing my muscles—my knowledge of my facial instrument; doubling, tripling its time signature; practicing in front of the mirror; the scales required to develop finely calibrated facial dexterity—Squirt. Poof. All of these grace notes … gone."

Lesley identified with and bemoaned Lavinia's cruel maiming that claimed her tongue and hands that, aside from the face, are the most expressive of body parts. Like Lavinia, she lamented at what had been cut off and for what was before her alterations. As a point of reference, Khang repeatedly used beef tongues in performances, using the over-proportioned bovine body part as a prosthetic paintbrush in *Zen for Mouth* (2003, 2004), *Linea Lingua* (2004), *Glossographia* (2006), *Artifice of Sacrifice* (2006), and *Phalogocentrix* (2007). The Canadian academic and writer Rinaldo Walcott wrote, "Khang dramatically re-languages the tongue by making a beef tongue into a prosthetic extension of his own . . . [his] performances thus signal a moment for the contemplation of a different conception of what it might mean to be human.

There are etymological points of reference. The humanness of the tongue is split when it comes to glossolalia, or speaking in tongues. For some, it is a sacred language, incomprehensible to all but the chosen. The Catholic belief is that speaking in tongues makes the gospel comprehensible across all language barriers. A smooth talker is silver-tongued; a liar speaks with a forked tongue.

As the viewer glances side to side to compare the flanking pre- and post-injection video portraits, Lesley's voices similarly oscillate between synchrony and dissonance. She lamented the lost abilities of narrowing her eyes, raising and arching her eyebrows, knitting her brow, and fretted, "My face feels as if it hangs off my skull more. I can feel the skin/muscle entity separate from my skull bones. Slippage? I do feel fear … Yes, a weight along my cheekbones that I wasn't expecting … My forehead hangs like a slab of meat around my eyes." As an actor, she is keenly aware of the nuances of expressions and of gestures. Paradoxically and contrary to what she expected, she has booked every audition since the injections. What was the meaning of this, she pondered. Did her new mask-like frozen visage have a more universal appeal? How did that reflect on her previous acting abilities? On her art? James Baldwin might have countered with his catholic commentary: "The purpose of art is to lay bare the questions which have been hidden by the answers."

Through the singular vision of David Khang and his broad embrace of and expertise in both the sciences and the arts, he was able to transform a thwarted experiment in Australia and the use of a newly approved injectable pharmaceutical for dentists into two stunningly different exhibitions that ultimately relate to each other on several surprising and insightful planes … the mashup destinies of scientist-artists, of sharks and men, of smiles and dentition, of Botox and Shakespeare.

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