HONG KONG MENWITH BRITISH INTERNATIONAL SCHOOL TEACHERS PROFESSIONAL ASSOCIATION (TPA) GUIDANCE FOR TEACHERS ON THE USE OF "NANOCAMS" AND OTHER NON-VISIBLE SURVEILLANCE TECHNOLOGIES

Introduction

The debate about classroom surveillance is not a new one. At the end of the last century, the Menwith TPA worked hard to develop protocols that responded to the challenges brought by the old-style "closed circuit" surveillance systems. These protocols aimed to protect the privacy and professional rights of teachers, whilst also acknowledging the potential benefits of such a system in terms of crime detection and prevention. The "closed circuit" system, as archaic as it may seem now, had certain advantages over today's technology. Being image-based, the system used cameras which were large and highly visible — often placed high up in the corners of rooms. The information they gathered was, as a direct result of this, in the form of single viewpoint video and, owing to data storage limitations at the time, was often of poor quality. As such, the fallibility and subjectivity of the information was always considered foremost whenever it was used as evidence.

Traditionally, teachers have objected to surveillance in classrooms as it may, directly or indirectly, he used to monitor teaching and learning or the professional conduct of teachers.

Henry Sze broke off from writing. Closed circuit surveillance cameras weren't quite as old-fashioned as he was making out. Certainly the concept wasn't so foreign. Up in the corner of the room where he was now working was a camera – one of a dying breed of image recorders that he had bought with his wife when their son was born. There was a certain charm to it, now that he recalled. As his son, then later his daughter, slept in their cots below the camera, he and his wife could keep watch from the next room. The image feed was elevated and god-like. Mother is a child's word for god, somebody once said. We watched them constantly in their early life, Henry thought, although they couldn't see us. They slept soundly and we could see them. Perhaps that's why they slept so well.

Now they were grown up – teenagers – and the camera was redundant in Henry Sze's study, which had once been the nursery.

The "nanocam" raises similar concerns for teachers today, although the technology has advanced immeasurably. But while the concerns are similar, they are not the same: the complexity of the issues has advanced too. It is, for example, not even appropriate to use the word 'cam' or 'camera', despite the popular designation, as this creates false expectations in the minds of those concerned. For a start, a "nanocam" is not a camera, nor is it a single object. Data is provided by numerous nanobots which cling to an individual and send positioning coordinates through the mobile network. No images are actually recorded, just the relative positions of objects in the room, such as a child, a toy, a desk, or a teacher. These

coordinates are stored on a parent computer and a 3D video feed can be rendered from them. This video feed is how people generally know of "nanocams". The video feeds can be extremely accurate and startlingly realistic, and the "camera" can be placed anywhere in the 3D space.

Henry Sze remembered the old nanocams. For half of his monthly teacher's salary he bought a single nanotransmitter and the software that would render a crude, featureless sprite of a child against a 3D background of collaged photographs. He could watch his son walking home from kindergarten through the streets of Hong Kong as captured five or ten years previously by street view cameras. It was strange and endearing. It was also pointless: his wife had walked home with their son every day, making sure he was safe, although she did not appear on the feed at that time as she had no nanotransmitter and his son's could not detect external objects.

Yet, this objectified form of surveillance had a ring of truth to it, despite the apparent falsehoods. After all, how much truth was ever there in a camera image? That a certain person was apparently in a certain place at a certain time? Digital image manipulation put paid to any sense that "the camera never lies" long ago.

The technology caught on. People liked the idea that their children could not get lost or kidnapped, not that these things ever happened in Hong Kong anyway.

By the time Henry Sze's son was in primary school and his daughter had started kindergarten, they each had several hundred nanotransmitters in different locations on their bodies. The more transmitters you had, the better you could triangulate positions and identify movements. The rendering power of the parent computer software improved and soon people were regularly seen 'skinning', that is, taking digital images of the outside and inside of buildings and locations and adding these to the central database, thereby keeping the rendered 3D images accurate, detailed and up-to-date. A demonstration was seen of a man wearing one million nanotransmitters, and observers reported not being able to tell the difference between reality and the render. And just as soon, nanotransmitters were being sold in packs of a hundred, a thousand, and ten thousand.

Teacher unions and professional associations around the world have condemned the use of nanocams in classrooms.

Although policies vary between countries, certain common objections have appeared and these are summarised below.

Henry Sze consulted his notes from the TPA meeting. What were the objections? The use of the mobile network was certainly one of them. It is notoriously unsafe and teachers are in the business of safeguarding – protecting children from any sort of maltreatment or impairment. Care. But in China, care begins and ends with the family. People don't have high expectations that others will care for their children. The idea of safeguarding is a western import, but then, so was everything at Menwith British International School. Nevertheless, despite the objections, nanocam evidence had never been used in a

court of law. At least, not yet.

He put aside the TPA Teacher Guidance and flicked on his nanocam feeds. His daughter was sitting an exam today and as he watched, the vector data from her two hundred thousand or so nanotransmitters formed a sprite, her sprite, sitting on an invisible chair, her legs crossed underneath, her head supported by one hand as the other held an invisible pen. As the sprite started to move and to breathe, so the skin was rendered. It was the default skin - she was wearing light blue jeans and a t-shirt featuring some Japanese cartoon character, and her hair was long and straight and cut into points. This was not how she was looking today - today she was wearing school uniform, of course, and she had long since cut her hair short. Henry Sze moved the virtual camera around behind her and looked over her shoulder as the desk and chair were rendered. Then her pencil case appeared, and the pen she was writing with, and even the exam paper, albeit skinned with random placeholder text. Beyond her, more desks and chairs and students appeared, and a teacher at the front of the hall, and then the walls were rendered from a patchwork of source images, giving a strange, mottled appearance to the school hall as if it were formed entirely of stained glass windows. For a while, Henry Sze tried to guess what she was writing from the movements of her hand and the pen, but that level of detail was available only to those who could afford transmitters in the millions.

Perhaps this was why he was struggling with the guidance for teachers faced with the possibility of having their working lives surveilled in such exhaustive detail. It was the fact that every teacher just like himself would do the same thing if they could afford it, and most of them certainly could. He had no doubt that throughout the territory, teachers were condemning the use of nanocams at their own schools, and keeping an eye on their own kids in exactly the same way.

Leaving his daughter with her exam, he picked up the feed of his son. He was at home today; he was in the next room in fact. The render there was faster with no other objects to deal with and four nice regular walls to bounce signals off. The walls appeared as they had done many years previously when Henry Sze had last sneaked in to skin his son's bedroom. There were the posters that had long since been torn down, the toys and games that had been stored, the certificates that had been filed. His son was a quiet boy and had made no special effort when uploading the skin for his sprite, preferring simply to wear his school uniform; and this is how he appeared now, sitting on his bed, quietly reading, as if no time at all had passed.

Why would I sit here watching him and not go and speak to him? Henry Sze thought. Because that is the nature of surveillance. It feeds the endless fear that all parents have, that they have somehow been negligent and that their negligence is the reason for their child's unhappiness or discomfort or disability. Surveillance provides a narrative of self-blame: that you weren't watching when something happened, or that you were but you were unable to do anything to help. It's almost a kind of insurance: not a guard against tragedy but a bet that life will be tragic.

I won't go in to see my son, thought Henry Sze. He won't be expecting it and he won't appreciate it,

even if he understands.

Instead, he began a new document:

HONG KONG MENWITH BRITISH INTERNATIONAL SCHOOL TEACHERS PROFESSIONAL ASSOCIATION (TPA) POLICY STATEMENT ON THE USE OF "NANOCAMS" AND OTHER NON-VISIBLE SURVEILLANCE TECHNOLOGIES

It is the resolution of this professional association that "nanocams" and other non-visible surveillance technologies will not be tolerated in the classrooms or other working areas of its members.

Too strong, thought Henry Sze, too strong. And anyway, there's nothing we can do about them. They're almost impossible to detect, certainly on our school budget. Besides, there *was* no resolution. The meeting ended in discord.

He sat back in his chair and sighed, and then, almost out of habit, he switched on his daughter's nanocam feed. It had to reload, and when it did so the virtual camera was skewed, as if gravity had been misinterpreted and the ground was perpendicular to where it should be. His daughter appeared on her side, first as vectors, then skinned, lying in a foetal position just as he had first seen her in those very first ultrasound scans. Henry Sze waited for the rest of the 3D world to render and for gravity to correct. Except it didn't. She really was lying on her side. The desk appeared, as did the other students and the teacher, all the right way up. His daughter was lying on her side on the floor and her chair was lying behind her. Henry Sze stood up sharply, then bent down to see the render more clearly. The skins finished loading and she lay still, the sprite with eyes open and smiling, like some cruel joke because her eyes must have been shut and she couldn't have been smiling.

Why is nobody helping her? Henry Sze left the room, grabbed his keys and left the flat. The school was nearby, just a five minute walk or a two minute run but the lift was slow and the pavements were crowded. He was delayed still further at the school office, who had to check his ID against their records and then he couldn't enter the main building without a staff escort.

Finally, at the door to the main hall the staff member entered and spoke to the invigilator. Henry Sze could not wait so he burst in and sidled between the desks to reach his daughter. There she was, just as she had been rendered, but not in jeans and not in a t-shirt and not with open eyes and not smiling. He picked her up carefully and shuffled down to the front of the room and out again. The door shut quietly behind him. The staff member did not escort him out.

Outside, in the fresh air, she recovered consciousness and was able to walk to a nearby doctors surgery. She said she was fine, but her father wanted to have someone check her anyway. They talked in hushed voices.

Do you remember what happened?

No. I think I'm just exhausted

Why was nobody helping you?

It's an exam. How can they stop to help me. They'd be disqualified.

But what about the teachers, the invigilators?

I don't know. Maybe they knew you had the nanocam on.

But they're banned in your school.

She shrugged. And she was right. Nothing can explain people these days, he thought. How many people would walk past before the Good Samaritan came by today? It's not apathy, it's more like complacency.

The doctor advised both father and daughter to take some rest and they returned home. Henry returned to his study and watched her get into bed and then lie there with her sprite's eyes wide open, always happy, always smiling.

He flicked over to his son's feed and this time there was something really wrong. The room was skinned, but the sprite wasn't and the vector diagram was completely distorted. The computer couldn't make sense of it. When he entered the room it was empty. The boy had gone. The nanotransmitters were there, presumably: somehow discarded and heaped onto the bed clothes. His daughter appeared at the door.

Dad, I'm so sorry, she said. I helped him to leave.

Henry Sze began to search for his son in the only way he knew how: on foot, door to door. As he did so he was surprised at how infinitely complex Hong Kong was. Every district was a labyrinth of roads and streets, and between each of these were further labyrinths of pathways, alleyways and the neverending tower blocks, shopping malls, markets, factories and office buildings. He imagined every building contained a strange, esoteric map on its façade, as if the specific arrangement of the bricks, or the network of piping, wires and ducting, or even the building names expressed in Chinese characters and English letters somehow contained some clues as to their contents, and to the location of his son. He saw almost no one skinning buildings – perhaps nanocams weren't quite as popular as he had thought.

He returned to his children's secondary school, but nobody had seen his son. The police had no record of him, and the hospitals had not admitted anyone bearing his ID card, or matching his description. It is easy to lose oneself in a city with the most sophisticated surveillance technology in the world. All one had to do was opt out.

Weeks passed and Henry Sze found no sign of his son. His daughter was unmoved by his disappearance, and in many ways she was a living reminder – an expression of the narrative – that had

led to the boy's disappearance. How could he blame her when she was still there, still living with it. He expanded his search to the Chinese mainland.

An old man now, Sze went to Mount Taishan in cold, dry Shandong in winter time. It was a flat, temperate land, cut only by the Yellow River and elevated only by the huge sacred mountain bursting out of the centre of the province. He had seen all of China, everywhere, and he had saved Mount Taishan for last; the fifth and greatest of the sacred mountains, one at each compass point and one in the centre. Sze was strong and vital, but he considered himself to be at the end of his life. It had been a life of dreaming, and his later years had been a slow process of painting those dreams onto a real canvas of experience in order to diminish their empty appearance of the truth. His life now – everything he saw with his eyes – was a testament to the nature of things: that to be real was to be experienced, and to be experienced was to be believed.

A stranger passed him by and joked, "I had eyes, but I did not recognise Mount Taishan!" He was quoting the ancient idiom, and it had crossed Sze's thoughts too. It was funny, but there was truth in it too, sometimes the familiar and the obvious and the plain cannot be perceived. That is also the nature of things.

The mountain was wrapped in mist in the early morning. The tourists were not there yet. There were no cameras, no nanocams, not even sketchpads. The mountain and the stranger and Sze himself were existing only as they were being perceived. Sze looked at his hands, and then at his feet, and then began to ascend the mountain.

Birds were chorusing, but were unseen in the ancient cypresses with their irregular crowns and the tall, tall pines. The steps up to the first of the many temples seemed to cascade down the mountainside like crepe paper. The stranger was far ahead, climbing energetically. He had almost thirty years on Sze, that was for certain. The damp air carried the faintest hint of incense. It would be dry again soon and the peak would be revealed. Then, the incense would be thick and dry and strong and would linger in the nostrils.

The way was hard-going. Sze hadn't realised how tired he was, waking up so early and with little food to start the day. His heart thumped against his chest and his lungs were squeezed tight after only a few tens of metres. The summit was over one and a half thousand metres. He called out to the stranger. The stranger turned, and then walked back down to help him.

THE END (3026 words)