



**4TU.** Centre for Engineering Education

Honours Programme Delft | Summer 2018  
Delft University of Technology

# HPD Study Tour 2018 Report

Hong Kong and Shenzhen

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# Introduction

We present to you the HPD Study Tour 2018 report, containing our findings from our trip to Hong Kong in Shenzhen. In the summer of 2018, **15 students of the Honours Programme Delft** (from Delft University of Technology), together with HPD Dean & Vice-Rector TU Delft; **Prof. Peter Wieringa**, spent eleven days in Hong Kong and Shenzhen, to learn about the local engineering culture. Due to the partial sovereignty of Hong Kong and the special economic zone in Shenzhen, this region especially allows for rapid change (economically as well as technologically). By visiting companies and universities in this region, we tried to gain insight into how the local engineering culture is able to keep up with (or even accommodate) these enormous and fast changes.

In cooperation with Aldert Kamp (Director of Education of the TU Delft Faculty of Aerospace Engineering, project leader for the 4TU.Centre for Engineering Education and Council Member of the worldwide CDIO initiative), we set about to prepare for answering these questions and for drawing comparisons to the Netherlands. Aldert Kamp's book '**Engineering education in a rapidly changing world**' sheds light on how, in general, changes in engineering culture impact the engineering education system. The book provided us with a strong foundation to find out if, and how, the engineering education system in Hong Kong and Shenzhen is able to keep up. By interviewing people with several different backgrounds (companies, academics but also government) we were able to identify several factors in which the Hong Kong & Shenzhen area engineering culture differs from that in the Netherlands.

To be able to identify these factors in the broadest sense of engineering culture, we decided that the research should include all four main stages of engineering culture.

- 1. Engineering Education:** At the roots of engineering lies education. Gaining insight into the local (engineering) education system, allows us to identify the origin of certain characteristics of the local engineering culture.
- 2. Engineering Work:** In an academic as well as corporate setting; how does the work done by engineers in Hong Kong & Shenzhen differ from that in the Netherlands?
- 3. Corporate Structure:** What is the general corporate structure in Hong Kong & Shenzhen and how does it impact the position and work of engineers?
- 4. Acceptance and Integration of Technology:** The slow or rapid implementation of new technologies generally depends on two factors: Government legislation and the acceptance of the (local) population. The differences in these two factors between the Hong Kong & Shenzhen area and the Netherlands thus provides insight into the differences in implementation of new technologies.

After dividing students into four groups (each with the goal to gain insight into one of the four abovementioned stages of engineering culture), we set about to prepare and conduct our research in Hong Kong and Shenzhen. To provide background and further foundation for our findings, we include results from the Hofstede Country Comparison Data in this report.

We hope that this report provides a clear and fruitful insight into the differences in engineering culture between the Hong Kong & Shenzhen area and the Netherlands. We wish you a pleasant read and hope you get as excited as we are about this topic!

*The HPD Study Tour Committee 2018*

# Table of contents

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<b>Introduction</b>	<b>1</b>
<hr/>	
<b>List of participants</b>	<b>3</b>
<hr/>	
<b>Programme in a nutshell</b>	<b>5</b>
<hr/>	
<b>Chapters</b>	
Engineering Education	11
Engineering work	21
Corporate Structure	27
Acceptance and Integration of Technology	33
<hr/>	
<b>Acknowledgements</b>	<b>41</b>

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# Programme in a nutshell



**DAY 1** On the first day, we landed in Hong Kong in the afternoon and toured around the city to get a first glimpse of its magnitude and atmosphere.

**DAY 2** We started off the day, and the Study Tour, with a presentation given by the Dutch Consul General in Hong Kong at the Dutch Consulate. We were able to ask numerous questions about the city and its challenges and especially its relations to the Netherlands.

Our next stop was the HKIE - The Hong Kong Institution of Engineers - which is an institution connecting engineering students and young professionals in Hong Kong. They presented their institution's history and the main challenges and problems that Hong Kong is facing at this moment and the role they could have in solving those. Afterwards, we had dinner with the board and several other members of the HKIE.

**DAY 3** Our stop on day 3 was the Hong Kong Science Park: an area in the northern part of Hong Kong where many (also Dutch) companies are settled in a campus-like atmosphere. We spent the whole day at the Hong Kong Science Park where we were guided around the campus. We were shown how the Hong Kong Science Park involves children in engineering by means of a robotics workshop and a large-scale board game.

In the evening, we took the famous peak tram up to Victoria Peak to enjoy the beautiful Hong Kong skyline.

**DAY 4** In the morning of day 4 we visited Arup, a multinational which provides engineering, design, planning, project management and consulting services for all aspects of the built environment. Their presentation displayed the variety of projects in which they are involved in Hong Kong; from smart city to the construction of one of the terminals of the Hong Kong International Airport.

Our next stop was the CUHK - Chinese University of Hong Kong, where Prof. Wong Suk-ying (Associate Vice-President of CUHK) gave a presentation about CUHK and its history. After Prof. Peter Wieringa presented Delft University of Technology and its history, we discussed the similarities and differences between the education systems and ways to potentially cooperate in the future. Next, we went on several lab tours in fields ranging from bio-technology to robotics at CUHK.

**DAY 5 & 6** Since day 5 and 6 were weekend days, we were able to experience Hong Kong in a more cultural setting. We visited the Symphony of Lights light show on the skyline of Hong Kong and tried to hike up the Hong Kong mountains to Tian Tan Buddha and the Po Lin Monastery. A hike during which we had to turn around almost half-way due to the bad weather on the top. We did still arrive at the Buddha by taking a bus up the mountain.

**DAY 7** On day 7 we visited the beautiful campus of the prestigious HKUST - Hong Kong University of Science and Technology. Prof. Ting Chuen Pong, Senior Advisor to the Executive Vice-President and Provost (Teaching Innovation and E-learning), and the Director of the Centre for Engineering Education Innovation gave a presentation about HKUST in general and their ways of innovating their education methods.



After Prof. Peter Wieringa gave a presentation of Delft University of Technology, there was room for discussion with Prof. Ting Chuen Pong and PhD students from several different programmes at HKUST. Then we headed to the Shenzhen, and after several hours at the Chinese border, made it to our hotel.

**DAY 8** At the start of day 8, we visited DJI Shenzhen and listened to presentations and watched product demonstrations. We had the opportunity for a lengthy discussion with one of the engineers at DJI Shenzhen and heard about his work and the work culture for engineers in Shenzhen.

Our next stop was Shenzhen Valley Ventures, a start-up incubator whose headquarters is situated in Silicon Valley. It opened an additional location in Shenzhen due its unique possibilities for engineering start-ups. SVV's Shenzhen director gave a talk and a guided tour and showed products developed at SVV. We even participated in the development of a sleeping mask which controls light intensity as the night progresses by letting their developers map our faces.

The final stop of the day was Sseed, a maker space famous for its development of IoT products. Sseed basically opens its doors for anyone who has a great plan and design for an IoT product which they would like to develop.

**DAY 9** We started off day 9 with a visit to Troublemaker; a makerspace situated at the heart of Huaqiangbei which develops an enormous variety of products, ranging from programming toolboxes for children to electrical skateboards.

We spent the rest of the day visiting Huaqiangbei, which is the largest electronics market in the world. People working all around Shenzhen in the different maker spaces come to Huaqiangbei to buy the components for their products. It was truly remarkable to see this place and its function in Shenzhen. It was definitely one of the most impactful visits of the HPD Study Tour 2018.

Unfortunately, the visit to the NOA Labs makerspace in Shenzhen was cancelled that evening.

**DAY 10** On the 10th day, we visited the Shenzhen Sino-Finnish Design Park, which showcases the development of important designs originating from Shenzhen. We were guided around different workplaces at the design park and there was plenty of room for discussion.

In the evening we headed back to our hotel in Hong Kong.

**DAY 11** In the morning of the 11th we flew back to the Netherlands. We look back at the Study Tour with enormous joy and excitement about the experiences we had and the knowledge we obtained from our visit to this amazing region!





# Engineering Education

## Team members

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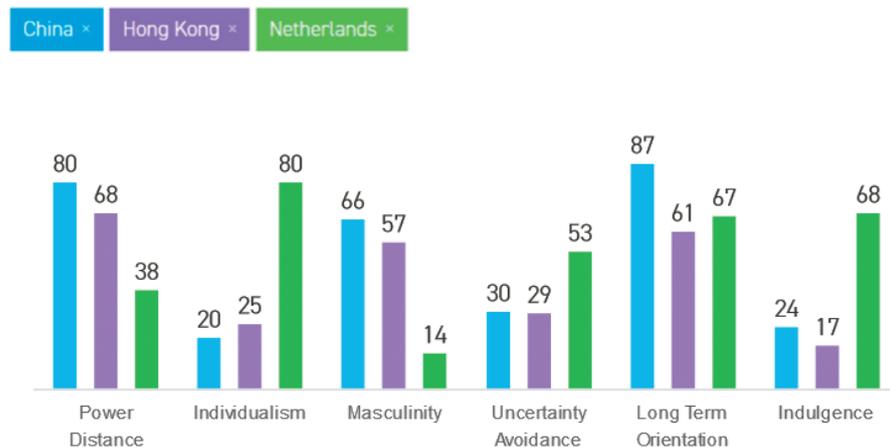
# Introduction

At the roots of engineering lies education. To properly determine the differences and similarities between engineering in the Netherlands and Hong Kong & Shenzhen we need to look at the engineering education institutions of these two regions. This is why we visited the Chinese University of Hong Kong and the Hong Kong University of Science and Technology (together with the HPD Dean & Vice-Rector TU Delft: Prof. Peter Wieringa). While comparing the educational institutions and systems of Hong Kong & Shenzhen and the Netherlands, we will consider the Hofstede Country Comparison Data (visualized in the graph below). [1] We will first introduce the notions in the Hofstede Country Comparison Data.

## Hofstede Culture dimensions

Culture is functional, Rapaille (2006) states: “We all have a complex set of motivations, inspirations, and guiding principles, those together form a secret code. Seeing how we think as a culture, how we behave as a group in predictable patterns based on this survival kit we received at birth, enables us to navigate our world with a vision.” [2]

Since cultural dimensions with their geographic significance help to determine or motivate a particular behaviour, it is vital that we connect the cultural phenomenon as we experienced it during the HPD Study Tour to the educational systems and goals of two countries.



### Power distance index

Power distance is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. [3] China scores a very high score - 80 on this dimension, indicating people in China accept a hierarchical order without questions. In the meanwhile, the Netherlands scores 38 in the power distance index, the low power distance score means: Being independent, equal rights, hierarchy for 'convenience only' are important values for the Dutch. Interesting is that Hong Kong scores an intermediate score of 68, which indicates that

the cultural value of Hongkongers shifted due to western influences compared to mainland China.

Our impression after visiting Hong Kong is that it is still very much accepted that there is a hierarchical order in society. Just by looking around in the streets the contrast in anything ranging from clothing to cars to buildings is clearly visible. This indicates that a majority of society is content with this situation, unlike in the Western world, where rich and middle class citizens blend in much more.

## Individualism

The individualism index has to do with whether people's self-image is defined in terms of 'I' or 'We'. [3] Another extreme contrast can be found here between China and the Netherlands. China has a collectivist culture accompanied with a low independence score of 20, and the Netherlands scores 80, therefore classifying as a strong individualist society. These cultural indicator scores are based on the paper by G. Hofstede from 1984. Now that 34 years have passed, and drastic changes are taking place in both societies, we think China would score higher than 20 today. As more and more younger generations are living alone or with their immediate families only, similar to Hongkong, merging both traditional and modern family structure. In figure 1, Hong Kong also scores a low individualism score of 25, implying that Hongkongers are strongly group-oriented despite the western cultural influences.

Another direct implication of the individualistic versus collectivist culture would be so-called 'Importance of Face'. [4] 'Face' is the English translation of a Chinese term, which indicates both the front part of the head and the dignity based on a correct relationship between a person and the collectivities to which one belongs. Most collectivist cultures are very face conscious, and loss of face can be felt to be more painful than physical maltreatment. According to Fang (1999), 'face serves as an 'invisible knife' to kill genuine feeling, often resulting in an indirect Chinese communication style.' [5]

## Masculinity

Within the masculinity dimension, a high score indicates masculine and is opposite to a feminine society. The Chinese society has a score of 66, and is the most competition driven society of the three. Hong Kong follows with a score of 57 and the Netherlands is least competitive with a low score of 14. In both Chinese and Hong Kong societies, achievement and success are highly determined by your career achievement, reflected in exam scores, salaries etc. Besides the competitiveness, a strong social differentiation between the sexes is also commonly found, meaning that men are given the more outgoing, and assertive roles, and the women caring, nurturing roles. In 2018, female candidates outperformed males by 16 percentage points in meeting the minimum entry requirements for university, reported by K. Forestier. [6] We can thus expect an increasing percentage of female engineering students in Hong Kong in the coming years which contributes to equal education opportunities.

While visiting the Chinese University of Hong Kong we observed that almost all of the renowned professors were male (meaning that in the past, most academic job positions were occupied by males). However, when visiting the labs in the summer of 2018, the ratio of female to male students was similar to that in Delft.

## Uncertainty avoidance

China has a low score of 30 for uncertainty avoidance, as does Hong Kong with a score of 29. The Netherlands has an intermediate score of 53. Chinese and Dutch are both adaptable

and entrepreneurial in nature. However, the Chinese are relatively flexible in regard to adherence to laws and rules, able to cope with ambiguity in daily life. The Dutch exhibit a slight preference for avoiding uncertainty. In the Netherlands, precision and punctuality are the norms, as a consequence, companies thriving for innovation may experience more resistance in comparison with China. At the same time, China has embraced the Maker Movement at a great scale. This was initiated 13 years ago by Dale Dougherty from the San Francisco Bay area. But why China? You might ask. Well, Chinese have long been finding clever ways to recombine components with expertise in manufacturing, and they want to raise their innovation game to get more recognition for the skills and creativity in them. This bottom-up approach has brought many decentralised innovations to the market and is expected to flourish even more in the years to come with support from the Chinese government. To support this movement, the general education system in mainland China needs to be adapted, by providing a more open, stimulating environment to encourage creative practices outside of task-based assignments that solely require a good memory.

It must be noted that at the Dutch Consulate in Hong Kong we were told that Hong Kong has more privacy regulations than China as of 2018. This implies that China is usually at the forefront of trying new technologies (Alipay vs HK banks is an example of this). China is even pushing English retail outside of Hong Kong. Many big Western companies are banned from the mainland so that local companies can flourish (which is not the case under the monopoly of Facebook and Google for instance, both of which are banned in China).

Start-ups are becoming more and more common in China; the creativity of people is no longer limited to their minds and the above shows that the government is in full support of this.

## Long-term orientation

Both China scoring 87, and the Netherlands scoring 67, differentiate the least along long term orientation. According to The Hofstede Insights, countries with a high score take a more pragmatic approach: in that they encourage thrift and efforts to modern education as a way to prepare for the future. In such societies, people believe that truth depends very much on the situation, context and time. [1] They show an ability to adapt traditions easily and have a strong propensity to save and invest.

Even though Hong Kong is currently the most popular location in Asia for company headquarters, it likes to keep an eye on Shenzhen (and the big companies based there such as Huawei, Tencent, etc). The growth of the city coming from services for 93%, and from manufacturing for 1.7%. The focus is shifting towards innovation, as was mentioned during the presentation of the Consulate General of the Netherlands in Hong Kong. From our visit to the Hong Kong Science Park it became quite clear that the government is indeed investing in the future of the city through research and entrepreneurship.

## Indulgence

The indulgence dimension is defined as the extent to which people try to control their desires and impulses. China is a restrained society as can be seen in its low score of 24 in this dimension. Hong Kong scores even lower at 17 as a strictly restrained society. These restrained societies do not put much emphasis on leisure time and control the gratification of their desires. This might be hugely influenced by the Asian work mentality, also reflected by the very strict education. Under huge pressure of

competition, Asian students hardly get any free time aside of school until the end of their high-school education. In contrast, Dutch society earns a much higher score of 68 and is seen as an indulgent society. The Dutch place a higher degree of importance on leisure time. People should do what they are good at, or what they enjoy doing. There is a huge freedom in career choice from family and society, which also gives a generally more relaxed atmosphere for living.

While in the Netherlands one might practice a sport or play an instrument for pure enjoyment, as a hobby, in Asia it is still custom to only practice sports for the sake of competition.

## Conclusion on the Hofstede Cultural Dimension analysis

When evaluating the scores of both Chinese and Dutch societies, we divide the level of difference into three levels of severity, **Strong** is the difference between 40-60; **Intermediate** is a difference between 25-39; **Minor** is a difference between 10-24. And the results are as follows:

Strong   dx=40-60	Intermediate   dx=25-39	Minor   dx=10-24
Power distance = 42		Uncertainty avoidance = 23
Individualism = 60		Long-term orientation = 20
Masculinity = 42		
Indulgence = 44		

From all six cultural dimensions, we find that China and the Netherlands differ very much along the dimensions of power distance, individualism, masculinity, and the concept of indulgence. Minor differences are present in uncertainty avoidance, and long-term orientation. In general Hong Kong is a more westernised society in Asia, under British influence for one and a half century. In general, Hong Kong differentiates a little bit (within a score of 10) in the direction closer to Dutch societies. However, in some dimensions, such as individualism, and indulgence, Hong Kong keeps its traditional Asian character.

Another disclaimer should be stated about the relevance of these scores. This study that was done in 1984, that is 34 years from the date this report is written. In the past years, drastic changes have taken place in both societies, caused by e.g. the financial crisis in 2008, and the huge economic growth of China. The shift in economic status all have a very big impact on the culture of both countries, if an updated study was to be carried out worldwide, there could be a significant difference in the scores. However, this is the material that we can refer to for this study, and it gives us a good overview that explains behaviour from both regions.

## Chinese University of Hong Kong

During our visit to the Chinese University of Hong Kong (CUHK) we were introduced to the educational system. One of the most interesting aspects was that besides the regular faculties as we know them here at Dutch universities, their system included a so-called college system. This system is comparable to the college systems at Oxford University and Cambridge University. As soon as students start their studies at CUHK,

they can choose to become a member of one of the colleges. In doing so, they adopt two 'identities':

1. Faculty of the student (e.g. student of Computer Science). The faculty of your major deals with the formal academics (the 'Dad').
2. College of affiliation (e.g. member of Shaw/United/Morningside...). The college is the 'Mom'. It brings together students from different majors. It is fully autonomous from the faculties and organises scholarship schemes, provides dorms to students and a support network/family.

At these colleges, the students can acquire skills which are not included in the regular curriculum, such as soft skills. The colleges also offer a socialising opportunity. This reflects on a belief that these kinds of skills are important in modern-day working environments. Moreover, CUHK uses a flexible credit unit system and offers general Ed courses. These statements are an indication that Hong Kong's education system, at university level, is shifting from a depth-focused to a breadth-focused one, aiming for well-rounded trained professionals.

Similar opportunities exist in universities such as TU Delft, and some are even mandatory. However, it is our view that incorporating such soft skills in education in a more mandatory fashion is crucial to be able to compete in working environments. CUHK is also focusing on collaborative teaching and internationalisation through Collaborative Teaching Programmes (double degrees that are split between CUHK and a partner university) and funding programmes for Outgoing Mobility and Internationalisation at home.

**Figure 1**  
**Visit to the CUHK**



## Hong Kong University of Science and Technology

At Hong Kong University of Science and Technology (HKUST), we concluded that this university is particularly focused on innovating its educational system. Like TU Delft, numerous MOOC courses have been developed. It has several EdX and Coursera high-quality (very popular) courses. Additionally, it offers summer schools for students all around the world to participate in an extension of one of their MOOC's about robotics. In this way, students can make practical use of the knowledge acquired in the MOOC in an intensive manner and in an international environment. This summer school, among myriad others offered in China, reflects the global mindset of the universities and their will to connect with engineering students from different backgrounds. This is also supported by the fact that HKUST is the university with the highest percentage of non-local undergraduate student intake in Hong Kong. It takes part in many innovative education initiatives such as UROP, Global Virtual Exchange Alliance.

Another aspect reflecting HKUST's innovative engineering educational system is the active implementation of a flipped classroom: a method in which asynchronous video lectures and practice problems are employed as homework and active, group-based problem-solving sessions are held in the classroom. Anecdotal evidence suggests that the learning experience is improved through this pedagogical method. [7]

Additionally, our interest was caught by one of the master programmes offered by the HKUST: Technology, Leadership and Entrepreneurship (TLE) which focuses on cross-discipline skills and provides an actual entrepreneurship process of developing a product or service and constructing a business plan that goes with it. This innovative programme enables students to learn exactly what is needed to become an entrepreneur through own experience. This programme is very internationally oriented, again reflecting the global mindset of HKUST, and is very unique in its approach. In our opinion, this programme also shows that HKUST is focusing on long term orientation, in the sense that the skills taught at this programme are very different from the traditional skills but are of great importance in the future.

## Dutch Consulate in Hong Kong

Our discussion at the Consulate General was quite broad. However, one of the most prominent topics of the discussion was the concept of mainlandisation. The effect of mainlandisation on education so far is not too noticeable. The curriculum in Hong Kong high schools is different from mainland China. Students from China apply as foreign students to Hong Kong and vice-versa, so they do not have the same standardised tests. Currently there is a discussion on learning about China's history in Hong Kong, but that looks to be the extent of it. As more of an anecdote, there are about 300 Dutch students in Hong Kong, most of them there for a 5-month exchange.

The 1st of January of 2019 the Working Holiday Programme between Hong Kong and the Netherlands will start with a trial run of 100 students. Both countries will have outgoing and incoming students who will be working abroad for a period of time as a way of integrating into the foreign culture.

**Figure 2**  
**Visit to the**  
**Dutch Consulate**  
**in Hong Kong**



## Hong Kong Institution of Engineers

The Hong Kong Institution of Engineers (HKIE) was established in 1947 and has 33,000 members. It is a hub for engineers in Hong Kong that not only provides a network and educational platform for all its members but actively works on pressing issues in Hong Kong. Some of the problems it tries to tackle are:

- Housing ■ Climate change (energy companies are private) ■ Flooding/typhoon season;
- Waste treatment (introducing waste to energy to replace landfill waste; paying for waste will also become the norm) ■ Smart City ■ Mobility ■ Living ■ Environment
- People ■ Government ■ Economy

The sense of community is vibrant in this institution and it offers a platform to many engineering students and young professionals in Hong Kong.

**Figure 3**  
**Visit to the HKIE**



## Conclusion

We would like to conclude with a few remarks and recommendations. The Hofstede cultural dimensions show that the Netherlands and China are quite aligned in terms of long-term orientation, with a specific focus on entrepreneurship and innovation. This became abundantly clear not only from our visits to the Chinese University of Hong Kong and Hong Kong University of Science and Technology, but also from our meetings with the Hong Kong Institute of Engineers, several incubators and venture capitalists.

Based on this, we recommend that TU Delft and the Universities in Hong Kong align themselves on a programme based on innovation and entrepreneurship. Future opportunities for students could include case-based summer work abroad in international teams, where one month could be spent exploring the case in the Netherlands and the next could be spent in Hong Kong. Overall the HPD Study Tour has opened our eyes to the future possibilities of educational collaboration between the Netherlands and the universities in Hong Kong.

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# Engineering work

## Team members

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## Introduction

Over the past decades, the field of engineering has undergone tremendous developments, ultimately supported by the rapid advancement of technology in the field itself. Changes are taking place with an unprecedented frequency and never before has it been so important to continuously assess and adapt the critical role of the engineer in the working environment. One of the major contributors to the changes regarding engineering work has been globalisation, for it has allowed intercultural cooperation as well as the use of globally available information resources. One of the observed effects is that companies have started to outsource specific types of engineering work to low cost countries as a means to save both money and time. [3] But that is not the only aim. What is more is that outsourcing has been proven to stimulate creativity and innovation [5] during the product development process, while simultaneously providing insights in the trends that are going on in the rest of the sector.

Undoubtedly Asia, and in particular China, is known for cheap labour, so it comes as no surprise that outsourcing events have had a big impact on shaping the engineering market as we know it today. As a result, questions arise with respect to how the Chinese and western market relate to and differ from each other. What are the future prospects for graduated engineers and what expectations, set by companies, do they have to live up to? This chapter will explore the relation between engineers and companies in more depth, with a focus on the contrasts between China and the West.

## The People

Western engineering companies have been expanding their research and development (R&D) programmes to Asian countries as a result of globalisation. [4] Despite the advantages of intercultural working environments, multinationals often run into problems caused by the vast differences between employed engineers from various backgrounds, which ultimately leads to clashes during cooperative projects. Two important factors that lay at the heart of this clash, are the institutional context of the country of origin as well as the cultural background of the engineer. Both factors contribute to the personal norms and values, work-related attitudes and last but not least to the particular methods of conduct in the working environment. Ultimately, Chinese and western engineers are distinct from each other and it is fascinating to analyse this observation more in-depth.

This provides the starting point for making an assessment of the relation between Chinese and western engineers and how they relate to the companies that recruit them. Institutional backgrounds were found to have a major influence on work-related attitudes among people. [1] These institutions have been shaped by early political and legislative actions, that were determined by the governmental rule. [6] Having established this, they condition large parts of the attitudes and behaviours that are found in organisations and companies, which are unavoidably interconnected with cultural values and norms. Institutional framing in China has taken place for a long time and establishes itself in the shared value of social obligation to higher authority and family. This in contrast to the western standards in which the individual's interest remains central. However, over the course of time the boundary between institutional and cultural causation has become a grey area and the two factors now influence the working population in an interconnected, indistinguishable manner.

In order to gain a better insight into the cultural and working-attitude differences that exist today, people who have experienced both cultures for a long time were asked about their opinions on the issue. What we understand under culture in this case, is the sharing of motives, norms and values, identities and the way in which interpretations are made, all of which have been transmitted from generation to generation. [7] The most important differences regarding behavioural conduct that were found relate to three issues.

First of all, there is a striking difference between the role people consider themselves to have in the population. Whereas, people from the West generally consider themselves to be independent individuals, choosing whatever is most convenient for themselves, Chinese people feel a sense of interdependence and accordingly will always behave in a calm and attentive manner. In the working environment, this mostly becomes evident during discussions in which generally speaking the western attendants will clearly express their opinions, opposed to Chinese people who are more modest and reserved.

Secondly, an interesting observation is that Chinese and western employees take different approaches in problem-solving matters, mostly arising from their distinct reasoning methods. [4] Western logic can be characterised as 'black or white logic', a statement is either completely false or entirely true and there usually is no way in between. This is called predicate logic. One possible explanation for this logic could be the desire for predictability and certainty that is not uncommon to western people. On the contrary, in Asian reasoning a statement can be true or false and anything in between, which can be considered a more fuzzy logic. Though there is no good or wrong manner of reasoning, both methods manifest themselves in different ways during design processes. Western engineers will often bring stability, punctuality and solidity to projects, whereas generally speaking Chinese engineers do not mind ambiguity and uncertainty during the process development.

The last important distinction that can be found in the working environment, is the attitude towards hierarchically higher positioned employees, such as senior managers. Since China has always valued a hierarchical and collectivistic culture, Chinese engineers will always go out of their way in order not to upset their managers. They will not express their criticism or disagreement directly in public, and rather keep it to themselves. On the contrary, western engineers in general do not think twice before directly confronting their manager. Their individualistic nature encourages them to share and challenge ideas and express opinions in ways that are often unacceptable in the Chinese culture. Chinese engineers have learned to listen, pay close attention and only speak up whenever they are asked for their commentaries.

So in a nutshell, the working-attitudes of people in Asia and Europe are influenced both by institutional context and cultural background. Both factors, and combinations of both factors, account for the observed differences between western and Chinese people in the working environment.

## The Companies

Now that the differences in working attitude have been discussed, it is interesting to move on to the variety within companies, based on their country of origin. The most striking difference between western and Chinese companies lies in the exposure to hierarchy. The understanding and implementation of hierarchy works fundamentally

different and leads to a contrasting organisation of western and Chinese companies. In addition to that, the workplace relationships tend to take a much more personal character in China, which is rare amongst European workplaces.

Vertical hierarchy and clear distribution of responsibilities play very important roles in Chinese businesses. Every job is associated with a clear title and position within the company structure. It is crucial to know the titles of other employees and use them in everyday interactions, not doing so and addressing somebody simply as Mr./Mrs. is considered disrespectful and careless.

As mentioned earlier, Chinese employees will always try to avoid any direct confrontation with their superior and generally respect his or her decision as the right one. In addition to that, anything out of the ordinary needs to get approval from above, meaning that even small issues often travel multiple levels in hierarchy until somebody is confident enough that he has enough power to make the final decision. Trying to work around the strict 'chain of command' is very uncommon and is generally viewed as slowing processes down. [7]

While the western world also used to have relatively strict hierarchies in the past, the trend over the last decades has been to promote flat structures and teams that collaborate at eye level. Especially the mid management has experienced a significant reduction in size over the past years. [8] Many corporations have seen potential for cost savings in this area, and promoted a structure that consists of a big number of smaller teams that operate relatively independent. Management certainly does still exist, but it is working at a high level and mostly occupied with market matters and strategy of the company. The so-called 'micro-managing', in which even small decisions have to be approved by management is now seen as old-fashioned and inefficient. Responsibilities are more evenly distributed and lower-level employees are more trusted by their superiors.

Another key difference is the importance of relationships. While westerners usually make a clear distinction between private and professional relationships, Chinese business relationships have a much more personal aspect to them. You are expected to care about your colleagues' and business partner's private matters and stay up-to-date with family concerns. However, the hierarchical aspect can be observed here as well, as the superior often takes a parent-like role for his employees.

Another important factor is loyalty, which is very important in China and should not be taken lightly. For many workers, their job and future job opportunities are closely tied to the loyalty towards higher-ups, and breaking this loyalty may not only cost you your workplace but also ruin future prospects connected to that person or his network. [2]

This can lead to extreme cases in which people transition slowly from one job to another by working both at the same time, on the one hand to not betray your old boss and on the other to slowly acquire trust at the new job.

While networking and business relationships are also important in the western world, people are still mostly judged by the quality of their work. Showing too much loyalty and following your boss on the step might even be seen as a lack of personal opinion and individuality, and might affect your career in negative ways.

A last controversial aspect that should be mentioned is the difference in company-government relationships. Western companies certainly try to influence legislation

through lobbying, it is however quite regulated and politicians who clearly act to satisfy the needs of corporations are confronted with heavy criticism from the media. On the contrary, it is very important for major Chinese companies to keep healthy relationships with the Communist Party of China. The government tends to be quite involved in the economy and government relations can make a major difference when it comes to funding or contracts for the public sector. It is very common that high-level managers have good personal connections to high-level politicians.

## The People-Company Fit

In bringing the previous two sections together while analysing the fit between the people and the companies now and in the future, we first consider people and companies in the West.

Reiterating the first section, we find that employees in the West are characterised by their individuality, strong at expressing opinions, and a relatively direct contact with superiors. The companies have a flat organisation structure, and employee-boss relationships are relatively close. It soon becomes apparent that there is a natural fit between the people and the companies they work for. This is not at all surprising, as companies primarily consist of people. Both the people and the company they work for are subject to the cultural processes mentioned in the first section.

As such we conclude that the people-company fit in the West is good; at least in cultural terms. Considering now Chinese people and companies, we draw a similar conclusion. The people in China are characterised by a more careful expressing of opinions, a relationship with their bosses in which the former tries to please the latter, and employees only raise concerns when being asked by their superiors. In turn, the companies have a strongly hierarchical structure, with relatively formal relationships in the working environment.

Again, the natural correspondence between the two is well apparent. A culture fit between the people and the place they work is clearly present.

Looking towards the future, we can only speculate as to how the people-company fit will change. In the West, a large transition from strongly hierarchical company structures to more flatly organised companies took place in the last six decades. Keeping this transition in mind, it is not unthinkable that Chinese companies will follow the same path. As the tremendous economic growth of the region is slowing down, reducing organisational overhead has increasing priority. Assuming no changes in the West, this would imply a convergence of company culture between the two regions. In an increasingly global world, a reduction in culture clash is even more beneficial than it is today. Moreover, globalisation might even stimulate such a change: as more people work globally and cooperate, their cultures will converge as per the processes outlined in the first section. The culture of the companies they work for will follow.

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# Corporate Structure

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## Introduction

During our visit to Hong Kong and Shenzhen we wished to uncover key aspects of the corporate structure, focusing on work culture, and how this differs from the structure of corporations in the Netherlands. We focus on three main points, outlined below:

*How strong of a hierarchy does reside within institutions?*

*How result driven are people, and how strongly are people pushed to produce results?*

*How strongly do ethical issues influence the policies and actions of institutions?*

In the Netherlands, the consensus seems to be that there is an informal atmosphere within institutions [1], with people often being direct in a flat hierarchical structure. It is occasionally presumed that Asian work culture is very reserved, respect-based, hierarchic, and focused on success and climbing the corporate ladder [2]. We however wish to investigate to what extent this holds true, if at all.

In this chapter we investigate the differences found with regards to corporate structures in Hong Kong and Shenzhen as compared to the corporates structures and work culture in the Netherlands. These results were acquired by visiting companies/institutes and by asking questions regarding mainly the work culture within the respective company or institute. This research only serves as an indication concerning corporate structure and work culture in Hong Kong and Shenzhen, as it is fairly limited in its scope.

## Hong Kong Area

Hong Kong's economy is considered to be the world's freest economy in part due to the absence of import and export taxes [4]. This in turn results in Hong Kong being considered as a trusted international financial centre with a large concentration of wealth and high quality of products/services. In fact, services account for roughly 93% of Hong Kong's annual GDP. This environment can be likened to the environment of Amsterdam during the Golden Age, when it was the world's biggest trade metropolis.

Being an enormous financial centre on such a small piece of land, about the size of South-Holland, also brings with it several issues. Hong Kong is currently struggling with a crippling housing shortage. Furthermore, Hong Kong has according to some a considerable income inequality problem [3][4] despite its high human development index (0.917) [5]. Lastly the political future of Hong Kong is uncertain as in 2047 Hong Kong is set to lose its special administrative status within China [6]. Below we outline some of our findings from several institutions and companies.

At the Hong Kong Institution of Engineers we got an indication of the path that an engineer might take in his or her career. After graduation, engineers follow a three-year training programme, where they are under supervision of a 'mentor'. After finishing this training programme the student-engineers work on their own for two years to gain experience, after which they need to take an exam in their respective field in engineering. If they pass that exam the student-engineers become fully certified engineers. They then all take their role inside an hierarchically structured engineering-company, with the chairman at the top, and the new engineer at the very bottom.

The new engineer can climb this hierarchical ladder through years of hard work, showing respect, dedication, and strong results.

At Arup, a large architectural firm situated in Hong Kong, we found that a very flexible corporate structure is utilised to stimulate creativity and sharing of ideas between multiple engineers. Engineers are further encouraged to challenge the status quo, and not to simply accept what has been done before, in contrast to the perception that people in the east have a strong desire to only follow tradition and maintain a strong hierarchy.

In all companies and institutes visited in Hong Kong, we observed a respect-based environment. In some companies all of the people in a meeting had to sit in a specific order, ranking from the most important person to the least important one. Every greeting and goodbye comes with a plethora of bows and other expressions of respect. The directness of people often observed within the Netherlands, was not present.

The hierarchy found in Hong Kong based companies and institutes resembled the hierarchical structure we have in the Netherlands. The performance-based culture in Hong Kong did not differ much from the performance-based environment found in the Netherlands. Both cultures are aimed at working hard and producing results, occasionally it seems at the expense of the personal welfare of an individual. In Hong Kong a normal working week consists of forty hours, quite similar to the Netherlands. These similarities between the two corporate environments might follow from the fact that Hong Kong has become, especially for an Asian metropolis, heavily westernised. Another explanatory factor can be that both the Netherlands and Hong Kong are enormous financial epicentres, resulting in a semi-hierarchical result-driven environment in both the Netherlands and Hong Kong.



**Figure 1**  
**Visit to DJI Shenzhen**

**Figure 2**  
**Visit to Shenzhen**  
**Valley Ventures**



## Shenzhen Area

Shenzhen is a city within China that does not benefit from special administrative rights, and needs to obey mainland China laws. This is in some ways beneficial for companies as Chinese law allows for longer work hours and a lower minimum wage. A lack of laws concerning privacy also allows for rapid prototyping of certain technologies which in most western countries might take longer to develop due to privacy concerns and the accompanying bureaucracy. Some of our findings are outlined below.

DJI is a company located in Shenzhen, founded in 2006 and specialised in the development of a wide selection of drones [7]. It was stated that DJI recruits people on their ability to excel, and focuses less on specialisation. They have many types of engineers focusing on different aspects of manufacturing drones, with 30.000 employees worldwide. As with Arup, they have a relatively flat corporate structure, with engineers being encouraged to share ideas. This might also explain the diverse nature of DJI and their statement: “above all we are a team of dreamers”.

Shenzhen Valley Ventures is a product of the startup-culture in Shenzhen. They make it easy for individuals to quickly prototype ideas, in addition to allowing mass-production of said prototypes. They mainly facilitate small-scale development, which is ideal for startups. It was also hinted at that ethical issues, including privacy, have a lesser influence when compared to the west on the ability to develop prototypes. This should allow for faster prototyping and more experimental prototypes.

Seed and Trouble Maker were described as ‘maker spaces’, which are locations where start-up companies are given the space and resources to produce whatever they like [8]. Within these maker spaces the true freedom of producing in Shenzhen became apparent. Anyone, regardless of professional background, could go there and produce whatever he or she pleases. Because of the less strict regulations of the government this production process, again, seems faster than the production process of the same idea in a Western country.

Shenzhen showed the same similarities compared to Dutch corporate structures as Hong Kong, despite not having the same special administrative rights that Hong Kong has [9]. Institutions it seems have become quite westernized. Furthermore, as Shenzhen is an important metropolis in worldwide production, the competitive nature and result-driven environment is present. We found that corporate structures in Shenzhen therefore, to a certain extent, resemble those of both the Netherlands and Hong Kong. Interesting to note is thus that the lack of personal rights like privacy and to some extent free speech in China do not seem to affect corporate structures as much as it influences the day-to-day life.

## Conclusion

Based on the institutions that we visited, we conclude that the differences between the Netherlands and the general region are not that significant with regards to the structure of institutions and corporation, in particular the atmosphere in such corporations. The main difference we observed was the respect-based culture, which influences the structure of such corporations. Another small difference, especially in Shenzhen, was the lesser influence of ethical selection of employees. People from all over the world, all with different backgrounds, come to Shenzhen, and all people are accepted. One of the reasons for this is that within the acceleration city of Shenzhen people do not experience any kind of privacy. Everything is known about everybody, preventing the nescience towards new employees (which can lead to fear). This is often one of the main causes of ethnic profiling within the Western world. All other aspects of a corporate structure (e.g. the hierarchy and the result-based focus) we found to be quite similar to that of the Netherlands. We believe a reason for this is that Hong Kong and Shenzhen are quite Westernized, especially for Chinese cities, embracing the western way of running a corporation in the process.

Regarding Hong Kong in particular, another possible explanation is that Hong Kong is a major centre for import/export, business, and services. Because of its importance within the world trade environment, it is to be expected that Hong Kong remains westernized. To conclude, the only main difference is that in Hong Kong and Shenzhen, the direct nature of people in the Netherlands is substituted for a slightly more respect-based culture with hierarchy generally being respected.

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# Acceptance and Integration of Technology

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## Introduction

As part of our research project we investigated the differences between China and the Netherlands regarding the acceptance and integration of technology. Both Shenzhen and Hong Kong are subject to different legal systems. As a result of this, Hong Kong and Shenzhen, or rather, mainland China, also have significant differences regarding our research subject. Our experience in the matter was gained by interaction with people, stores on the streets and through company and university visits. This experience has given us some insights, that we will elaborate on in several hot topics.

## Government Policy

First of all, China is aiming for technological innovation, the promise of smart technology for a better future is a big hype. The Chinese government encourages companies to innovate. Unlike in western countries, the Chinese are less prone to taking precautions. They correct problems when they occur.

Although this aim seems to be coming from government policies, the general public is positive towards it. They believe that 'smart' is the future and cheer the government on for pursuing innovations.

One of the main consequences of this progressive attitude towards technological development is seen in the less strict legislation when it comes to, for example, the safety of new technology. More than once we have heard people from a company tell us how much more easily new products are developed, produced and implemented in the Chinese market.

Another important consequence of this large scale integration of smart technology into the Chinese society is that vast amounts of data are collected and stored by the businesses and government, in stark contrast to western society. The people in China are (mostly consciously) giving up a lot of their private data to be collected by smart technology services, to create a more convenient lifestyle. Whereas this kind of practice would most probably be a cause for lawsuits in western societies, many of the Chinese people we spoke expressed that they felt it was for their own good that their privacy was being reduced. They were confident that it would promise them a brighter future by bringing security, good behaviour and innovation.

Especially in mainland China (rather than Hong Kong), security related control is high, although not necessarily through smart technology. The amount of security cameras in public places is almost bizarre and police forces do patrol very frequently. Faces are being recorded every time when entering the subway network and bags are scanned. From this we may conclude that a culture of strict controlling already existed in mainland China, which might explain why people show less resistance in giving up their privacy now with the use of smart services.

To back up the claims made above, we will elaborate on some of the things that we saw during our trip and we think were remarkable.



**Figure 1**  
Cashier scanning the QR code [1]

## AliPay and WeChat Pay

In mainland China, not many people pay in cash. When you come up to the cashier paying for your groceries, you will notice a QR code on the desk and the cashier holding a QR code scanner ready to scan (figure 1).

This is how more than 500 million people are paying their everyday purchases in mainland China. [2] And those QR codes, come from two online payment giants: Alipay and Wechat Pay.

## WeChat

As of Q1 2018, WeChat has 1 billion active users each month. WeChat has been developed by Tencent group and was released in 2011. [3] One of their early products 'QQ', released in 1999 was the biggest online chatting programme in China. Soon Tencent seizes the opportunity in the up-growing mobile communication market.

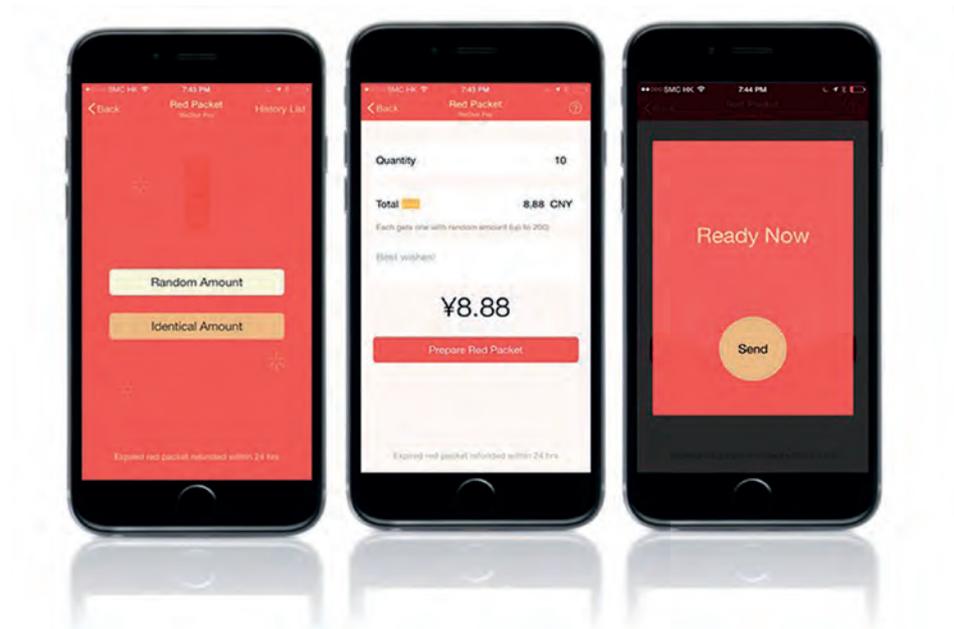
When Wechat first came out, people used it as a replacement for texting. Shortly after 2011, WeChat came up with many other functions such as moments, WeChat pay, find friends, mini applications, little games.

When WeChat pay first came out, many people used it to hand 'red packets' to their children during the Chinese New Year. It is a Chinese tradition to bow to your elderly and wish them a pleasant year, and in return the elders will hand you a red packet with money in it for good luck (figure 2). When a child is living in a city which is far away, family choose this way to hand their best wishes (figure 3). This went viral fast and people started using WeChat for payments with small amounts of money. Then Tencent made deals with banks, shops, and government. Nowadays you can pay anything with WeChat pay.

Figure 2  
Traditional  
red packet [4]



Figure 3  
WeChat version  
of red packet [5]



Since QQ came out in 1999, people were already used to paying money to Tencent to charge their games and extra function and features. Some of the users were already loyal to this brand. Therefore, it was not too difficult for WeChat to grow big as well.

## Alipay

Alipay is the mobile payment system from Ant Financial holding of Alibaba group. One of the biggest online shopping enterprises in the world. When the online shopping website of Alibaba, TaoBao came out in 2003, people did not trust online shops.

Since everyone can register and open a shop on Taobao, people were, of course worried about not getting their items while having paid for them. So, the Taobao agent was the third controlling party and only transferred the money to the sellers after checking whether the buyers actually received the product. By the time Alipay came out, consumers already trusted the company. Thus, the threshold of using Alipay was low for the Chinese citizens.

Nowadays you can use WeChat pay and Alipay at every store, hairdresser, nail salon, hotel, restaurant and small stand at any open-markets in mainland China. Even the beggars will not even give you the chance to say that you don't have cash with you. Since the Chinese buyers tend to have a big influence in the market of luxury products beyond the Chinese borders, you can now also see the QR codes of Alipay and WeChat pay in luxury stores and cosmetics stores in the US, Australia, France and most other Asian countries. [6]

## Octopus Card

In Hong Kong the payment method is a bit less advanced as in Shenzhen. Yet it is already more convenient than in the Netherlands.

In the Netherlands we have seen fast progress in the way people pay. Where we used to pay with cash money, the debit card has taken over the majority of retail payments since 2015. [7] Now with the development of contactless debit card payments, consumers are 25% more likely to use their card for small payments. [8] Apart from some tech-savvy people who use their phones for payments, this is where the Netherlands is currently at, while in Honk Kong they have gone a step further.

What was once introduced as a contactless card for public transportation, similar to the Dutch 'OV-chipkaart', the Octopus Card has now become a way to pay for everything. All public transportation and almost every store in Hong Kong offers a contactless Octopus Card terminal and the company has expanded to the online world as well. Consumers can make payments at about 70 certified online merchants using the Octopus app and also generate payment request codes similar to Tikkie and ING betaalverzoek. [9]

It might seem like the Octopus card is only a combination of a debit/credit card, a public transportation card and an online transaction service, but with more than 99% of the Hong Kong citizens using the card [10], it has become more than that. Commercial or residential buildings with restricted access have started using the card as an authorisation tool, even schools have adopted the authorisation technology.

Figure 4 to 6

A new generation  
Octopus card

A public transportation  
contactless scanner for  
the Octopus card

An Octopus card  
scanner for the  
Octopus card scanner  
on a vending machine



The Octopus card is therefore more than a collection of payment services, it is part of your Hong Kong identity as a citizen.

Although the Octopus card technology offers new and more convenient services to its citizens, it is still the question whether the same system would be adopted in the Netherlands right now. One can imagine the risk of letting a company store both the money and identity of nearly all citizens, without an alternative choice for citizens. Since schools make use of the card, young people would be forced to opt into the Octopus card as well as people using public transportation often.

It is true that none of the services that Octopus offers to its users are truly different than services that Dutch citizens use, but no one Dutch company concentrates the responsibility for all these services in the way that Octopus does. So which is better? An Octopus card, or an OV-chipkaart with a modern bank account and building access pass combined? In the end it comes down to the consideration of convenience versus risk.

## Sesame Credits

Hong Kong and Mainland China (Shenzhen) greatly differ when it comes to privacy. In Shenzhen, there are many more security cameras than Hong Kong. People in the Hong Kong region value their privacy a lot more, as we were informed during our visit to the Dutch Consulate in Hong Kong.

The cameras we saw in Shenzhen are not just there for security reasons, they are part of the social credit system, which was launched in 2014. This system aims to be fully operational in 2020. The goal of the social credit system is rating the trustworthiness of all 1.4 billion Chinese citizens.

This is important for the Chinese government, according to Rogier Creemers, a researcher in law & governance of China at Leiden University, and according to a lot of western media, to manage social order in China and make sure that the Party will firmly remain in charge. [11] Before we went to China, the pedestrian crossing facial recognition system in Shenzhen went viral in the Dutch media. However, walking in Shenzhen ourselves, we have not seen any of those face trackers at pedestrian crossings.

At the same time, this credit information is also important for the financial market in China. Having this system could prevent China from the credit crunch that the United States experienced in 2009. After all, becoming as financially independent as possible from the western world is one of the things that the Chinese government is striving for. The social credit system is not only a government initiative, private firms also play an important role. An example of this is the Sesame credit system, that for example uses buying and gaming behaviour to rate its users. This system was developed by Ant Financial, which is related to Alibaba, and launched in 2015. Having a high score can give you a variety of benefits, like being able to rent bikes or an apartment without making a deposit. [12]

While (mainland) Chinese citizens are enthusiastic about the social credit system, this system would not be as popular in Hong Kong, because Hongkongers value their privacy very much. Right now, Hong Kong is still protected by the Basic Law, giving the region much autonomy. However, when this law ends in 2047 this could change dramatically.

Among the citizens of Hong Kong there is great uncertainty as to what will happen next, especially when it comes to privacy. When asked, a Hong Kong engineer from the Hong Kong Institute of Engineers told us he was not even sure the Chinese government had not already put up cameras in Hong Kong. In other words, the privacy of Hong Kong citizens could already be diminished and even violated today.

We will probably never find out whether this is the case or not. What will happen when the Basic Law ends also remains uncertain. We do know that Hongkongers have a fundamentally different view compared to mainland China citizens when it comes to privacy. In 2047 we will know whether or not these two will come together.

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# Acknowledgements

We would like to thank everyone who has been involved in making the HPD Study Tour 2018 possible: Aldert Kamp, the institutions and companies we have visited in Hong Kong & Shenzhen, the Honours Programme Delft (and specifically, Prof. Peter Wieringa for joining us and providing us with feedback and help during the organisation of the tour), Delft University of Technology and Gupta Strategists (for sponsorship).

We also thank the HPD Study Tour Committee 2017 for helping us organise this year's HPD Study Tour by providing feedback from the previous HPD Study Tour to Tokyo.

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