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SOCIAL
CLUSTER FINDINGS

THE FUTURE OF ASIA: IMPLICATIONS FOR CANADA

THE
FUTURE
OF ASIA

Canada

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NOTE TO THE READER

This Social Cluster Foresight Study explores key changes in Asia and related policy challenges and opportunities for Canada. The key changes are in the form of "insights", which identify existing and emerging developments that may significantly alter the system under study. Insights help build our understanding of how an issue or system may evolve and what the consequences might be. A policy challenge or opportunity is an issue that current policies or institutions may not be ready or able to address. Identifying, analyzing, debating and clarifying challenges or opportunities help policy makers develop more robust strategies.

Part of the Horizons Foresight method also involves the exploration of plausible scenarios and the identification of robust assumptions. These are included in the MetaScan on "The Future of Asia" which integrates the high level insights and policy challenges and opportunities from all four cluster studies (economic, energy, geostrategic, social).

The key changes and potential policy challenges and opportunities explored in this study are intended to be provocative in order to stimulate thinking among public servants about the future. They do not reflect a view of the *most likely* shape of change in Asia or consequences for Canada, but rather plausible developments that merit consideration. While this study's development involved participation and contributions from officials across multiple departments within the federal public service of Canada, the contents of the study do not necessarily reflect the individual views of participants or of their respective organizations.

Introduction

Against the backdrop of rapid economic change, Asian society is undergoing complex and dramatic shifts. Demographically, East Asia's populations are aging rapidly, while South Asia is on the verge of a youth bulge (see Figure 1).[1] Rapid urbanization is also changing the landscape of the region. Every day approximately 120,000 people migrate to urban areas in the Asia-Pacific, and the proportion of people living in cities there is projected to rise to 63% by 2050 (from 47.7% in 2014).[2] While Asia's middle class has similarly been growing steadily, over the past two decades, 12 of 28 Asian economies (over 80% of the region's population) have also experienced rising income inequality of a magnitude that threatens social stability and economic growth.[3] Advances in technology and the forces of globalization further influence social changes taking place in the region.

These developments will present numerous challenges and opportunities for Asia as a whole. They could also be a source of disruption globally as Asia gains stature in the world and as interplay with Asia increases. As points of contact between Asian and Canadian societies multiply and certain experiences of Asians converge with those of Canadians (e.g. aging populations, middle class lifestyles, urban living and online presence), Asia will be more present both as a competitor and model to follow. For example, future work and immigration patterns in Asia could have a detrimental effect on Canada's domestic employment and fundamentally change labour markets, while Asia's advances in health care and

<u>Figure 1</u>

ASIA'S DEMOGRAPHIC WINDOW OF OPPORTUNITY: 2005-2040
Asia's demographic window (2005-2040) is the period for which the proportion of the working age population is particularly prominent (the UN Population Department defines this as the period with an under-15 population below 30% and an over-65 population below 15%). With different timelines and resources, Asian countries will age rapidly as these windows close, instilling a need to quickly build critical education, social supports, and health and retirement systems.

DEMOGRAPHIC WINDOWS IN ASIA
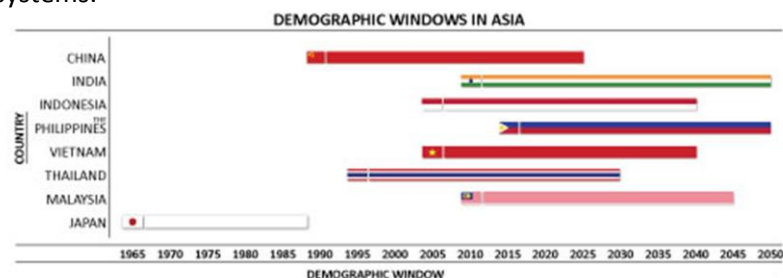
Excerpt from the book *How Asia Can Shape the World* (2011), by J.Ørstrøm Møller, p. 331, Table 5-1 using data from United Nations' *World Population to 2300*

education, or its policy approaches to intractable global problems, could offer relevant solutions for Canada to draw on.

This study, by no means exhaustive, explores some of the key social shifts taking place in Asia that may have a bearing on Canadian social policy in the next 10-15 years. The following table summarizes the key social changes (insights) that are shaping Asia and the potential policy challenges and opportunities for Canada addressed in this study.

KEY SOCIAL CHANGES IN ASIA (INSIGHTS)	POLICY CHALLENGES AND OPPORTUNITIES FOR CANADA

NORMS AND VALUES SHIFTS

CHANGING SOCIAL STRUCTURES, NORMS AND VALUES: As tradition gives way to new realities, a shift in longstanding values, behavioural norms and attitudes is taking place in Asia.

POTENTIAL RISE OF SELF-EXPRESSIONISM IN ASIAN COUNTRIES: Early indications of a potential rise of self-expressionist values in Asia could signal future changes in political, legal and social institutions.

THE ROLE OF TECHNOLOGY IN LIFE AND WORK

ASIA'S INTERNET EXPANSION: Asia may reach almost full connectivity by 2030, facilitating massive growth of Asia's online presence.

ASIA IS EMBRACING ROBOTICS FOR SOCIAL, COMMERCIAL AND INDUSTRIAL USE: A high comfort level with robots may mean that Asia integrates them in their homes and workplaces quickly.

VIRTUAL WORK IN ASIA: Asia is capitalising on the possibilities of the digital economy, leveraging competitive low wages and Internet connectivity to provide virtual services to global markets.

NEW ASIAN MODELS

THE INTERNET AND DATA ANALYTICS ARE SHIFTING CITIZEN-STATE POWER DYNAMICS: Citizens are being empowered by the Internet to hold their governments to account, and governments are using the Internet to identify citizen concerns and build legitimacy.

ASIA TAKING ADVANTAGE OF E-LEARNING: Faced with a large skill gap, Asian governments and businesses are promoting innovations in e-learning.

BOOMING ASIAN DEMAND FOR HEALTH CARE FUELS INNOVATION: Rapidly expanding demand for health care in Asia coupled with fewer constraints on research and development could put Asia at the forefront of health care innovation.

ASIA'S EXPANDING INFLUENCE

ASIA'S NEW CONFIDENCE INFUSES GLOBAL CULTURE: As Asia rises, a fundamental change in how Asia views itself – and how the rest of the world views Asia – may take place.

ASIA'S GROWING INFLUENCE ON THE INTERNET: Asia's rapidly expanding online presence will position it as a trendsetter in global Internet culture.

RESPONDING TO ASIA'S TECHNOLOGICAL ADVANCES

THE RISE OF VIRTUAL WORK: Competition for Canadian workers will arise in the form of virtual workers using portable devices and telepresence technologies, a situation for which most Canadians may not be prepared.

PREPARING CANADIANS FOR A RESTRUCTURING ECONOMY: As Asia pulls the world into the new digital and automated economy Canadians may need to develop new skills to thrive in an era of reduced job security.

SOCIAL POLICY INNOVATIONS FOR A WORLD OF NON-TRADITIONAL WORK: In an employment-precarious world, Canada may require new social policy models to distribute market income and social benefits that have typically been tied to jobs.

ASIAN MODELS CHALLENGE CANADIAN ONES

ASIAN HEALTH CARE INNOVATION BECOMES A DISRUPTOR FOR CANADA: If Asia becomes a global provider of health care solutions, Canadians may increasingly turn to Asia for their health care needs.

ADAPTIVE AUTHORITARIANISM MAY BECOME A LEGITIMATE GOVERNANCE MODEL: With enhanced digital capacity to listen, analyze and respond to public demands, single party governments and authoritarian regimes may emerge as a viable model for growth and stability.

ADAPTING TO ASIA'S INFLUENCE

ASIAN INTERNET LAWS INCREASINGLY RELEVANT FOR CANADIAN INTERESTS: As life moves online, Canadians will continuously have their identity and their physical world connected to servers in Asia. There will be a need to ensure this is a safe and secure experience.

GREATER COMPETITION TO ATTRACT TOP TALENT: Despite Canada's strong legacy as an attractive destination for immigrants, a rising Asia with rapidly improving living conditions could become a competitor for top talent.

PROMOTING THE CANADIAN BRAND: A GREATER ROLE FOR QUALITY OF LIFE : The need for Canada to compete will only grow, though its ability to attract immigrants and investments and to demonstrate influence on the world stage may be increasingly leveraged not by economic performance, but by quality of life.
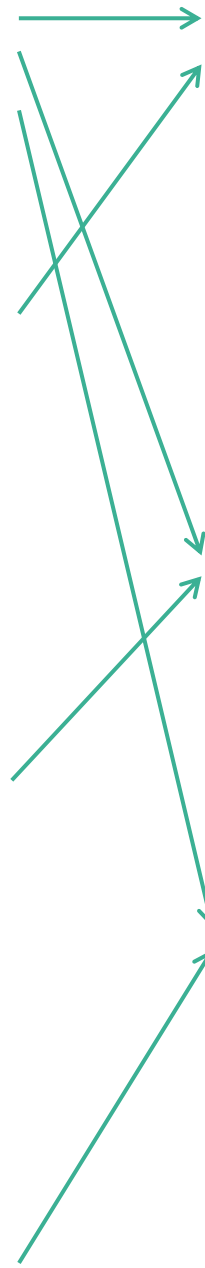
Key Changes in Asia (Insights)

SHIFTS IN NORMS AND VALUES

Asia is in the midst of profound cultural shifts that could impact everything from family relationships to economic and political institutions.

Changing Social Structures, Norms and Values

As tradition gives way to new realities, a shift in longstanding values, behavioural norms and attitudes is taking place in Asia. Some examples that have the potential to significantly alter Asian society by 2030 include:

- **Increasing gender equality:** while many barriers to gender equality remain throughout Asia, as women attain higher levels of education and involvement in the workforce[4] and as different life and career paths for women[5,6] and men become more visible, viable and accepted across Asia, there could be a fundamental power shift that raises the status of women in society.

- **Smaller, more diverse families:** economic realities, the changing role of women and other shifting values (e.g. filial piety,[7,8] marriage traditions[9]) are likely to reinforce declining marriage and childbearing rates,[10] decreased inter-generational co-habitation,[11] changing roles within families, as well as an increase in one-person households[12] and alternative family forms.

- **Increased tolerance for diversity and non-conformity:** Changing attitudes towards homosexuality (South Korea,[13] Singapore[14,15]), new discussions on bi-racial identities (Japan)[16] and legal recognition of a third gender (Nepal,[17] India, [18] Pakistan,[19] Bangladesh,[20] Thailand[21]) signal a more socially inclusive Asia.

> "In many ways our country's development was based on denying individual rights. Now that we've reached a higher stage of development, more people are making efforts to assert their rights as individuals."
>
> Lee Na-ra, activist in the civic group *Solidarity for LGBT Human Rights* in Korea

Although these changes will probably not occur uniformly or uni-directionally across Asia, they signal a level of flux that will require adaptation. For instance, there could be new pressures on governments and society as a whole to develop novel social security and care strategies as the family becomes a less consistent source of social support, especially in light of population aging. There may also be pressure to legally reinforce new social norms to protect individual and minority rights. To the extent that these changes are seen as a challenge to tradition or evolve rapidly and unevenly (e.g. between generations), Asia could see a degree of backlash and a clash of values between various social groups. Although this story may on the surface seem similar to Western historical experience, Asia brings different cultural legacies to a completely different era, meaning that the ultimate outcomes of these shifts may be unique and unexpected.

DO LIVING STANDARDS SHAPE CULTURAL VALUES?

The World Values Survey observes that economic development and subsequent gains in living standards are often accompanied by two principle value shifts:

1. From **Traditional** to **Secular-Rational** values: Traditional values place a strong emphasis on religion, traditional family values and deference to authority, where Secular-Rational values emphasize the opposite.
2. From **Survival** to **Self Expression** values: Survival values include a priority of security over liberty, non-acceptance of homosexuality and distrust of outsiders. Self Expression values include a high priority on environmental protection, growing tolerance of foreigners, homosexuality and gender equality, and rising demands for participation in economic and political decision-making.

This human development trajectory is represented as a movement *up* and to the *right* on the map in Figure 2. However, there are also 'cultural corridors' (e.g. Confucian, Orthodox) that affect the degree of movement; these are the historical influences of philosophical, political and religious ideas dominating a country.

Findings in this study suggest that Asia could be moving toward more self-expressionist values, though it is not clear how far to the right on the map these countries may shift or if all are moving in this direction. For instance, while Japan is furthest up and to the right relative to other Confucian countries, it does not share the extent of self-expression of most high income countries, which are even further to the right on the map.

"Norms concerning marriage, family, gender and sexual orientation show dramatic changes but virtually all advanced industrial societies have been moving in the same direction, at roughly similar speeds. This has brought a parallel movement, without convergence."
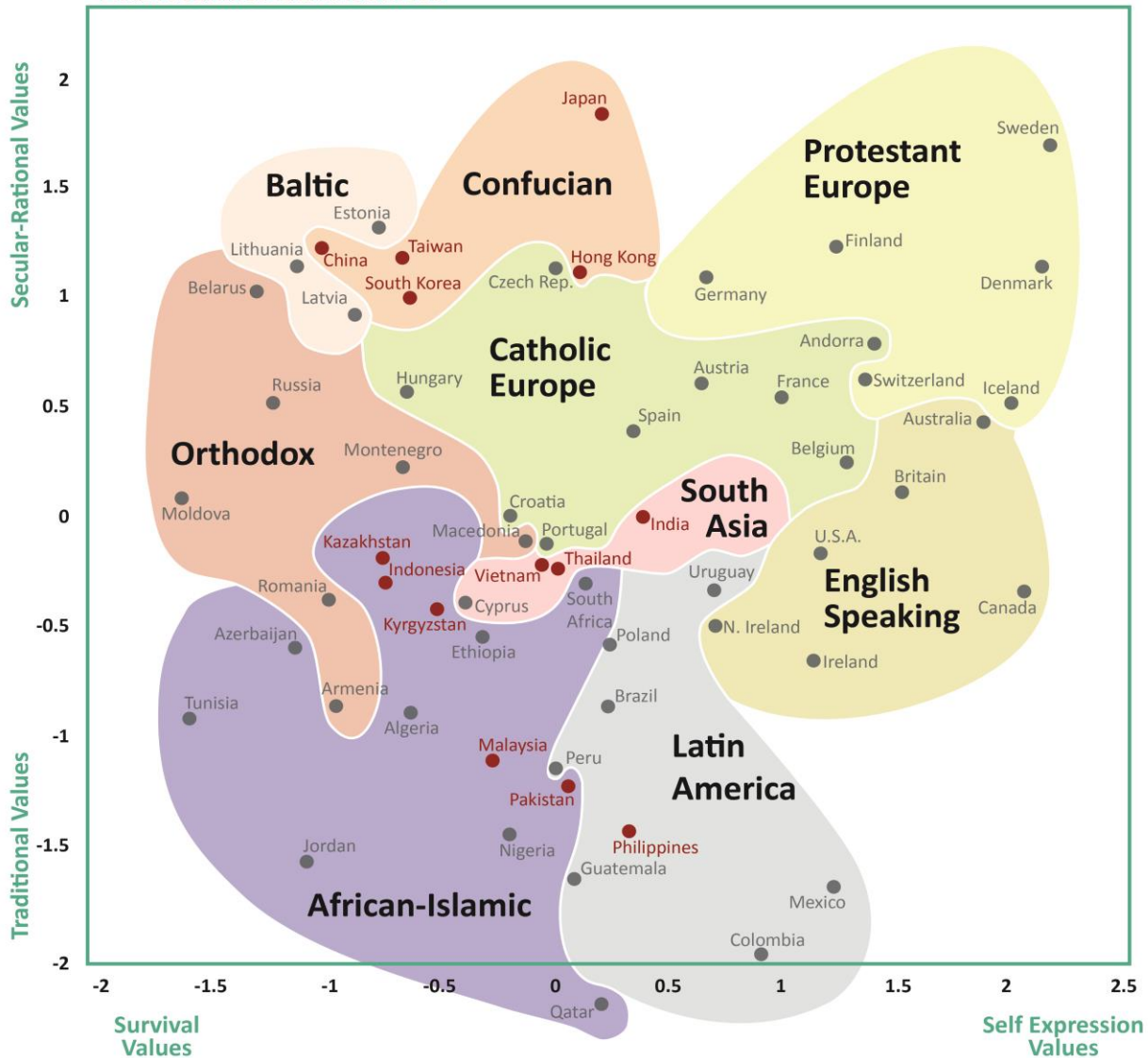[World Values Survey]

Figure 2

INGLEHART-WELZEL CULTURAL MAP OF THE WORLD
(World Values Survey data, 2015)

* Asian countries identified in red

Redrawn from World Values Survey: http://www.worldvaluessurvey.org/WVSContents.jsp?CMSID=Findings

Potential Rise of Self-Expressionism in Asian Countries

Early indications of a potential rise of self-expressionist values in Asia could signal future changes in political, legal and social institutions. The value changes noted above (gender equality, tolerance for diversity and non-conformity), when considered together, could be indications of a broader societal shift towards self-expressionist values. In common understanding, this is a shift from *collectivism* (a focus on duty and one's role as part of the group), to *individualism* (a focus on the individual experience and rights of the individual). Some might anticipate this shift to be a feature of a more prosperous Asia, however, it is by no means inevitable or clear how it could manifest in Asian culture[22] (see box on page 5). Even if it is too early to determine if Asia (or parts of Asia) is becoming more self-expressionist in outlook, it is worth considering how cultural values support institutions. Self-expressionism, which relates to feelings of increased individual agency, underpins the emergence and flourishing of democratic institutions[23] and the effectiveness of governance.[24] Self-expressionism also fosters social capital that supports a strong civil society[25] and has been linked to the rise of subjective well-being in many countries around the world.[26] A rise in self-expressionist views in Asia may result in greater international concurrence in laws such as human rights and labour codes. It could also drive new rights discourses framed by Asian interests. Might Asia challenge the world with a third gender movement or cast carbon emissions as a human rights issue?
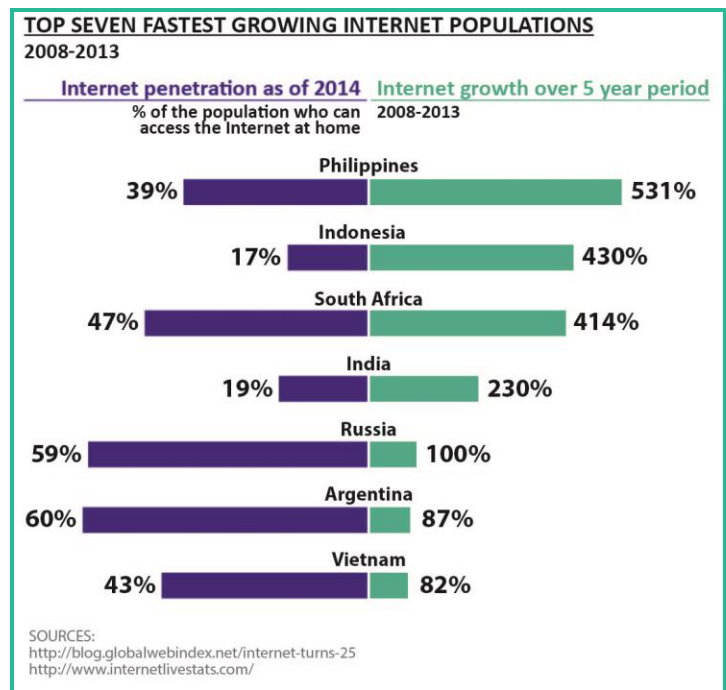
THE ROLE OF TECHNOLOGY IN LIFE AND WORK

Asia may find itself at the forefront of virtual life and robotics at work and at home as Internet connectivity grows and technologies proliferate. With a comfortable relationship to digital technologies and robotics, Asia could dominate a global market of virtual services, set norms for digital life and become trendsetters in digitally facilitated interpersonal relationships.

Asia's Internet Expansion

Asia may reach almost full connectivity by 2030, facilitating massive growth of Asia's online presence (see Figure 3).[27,28] Nation-wide infrastructure initiatives,[29,30,31] along with wireless last mile technologies[32] and improvements in distributed energy (see Energy study) will improve Internet accessibility in both urban and rural regions. Portable devices are increasingly a sound investment even for low-income buyers as they are tools to access the digitally-enabled sharing and microwork economies. As online applications integrate voice recognition and artificial intelligence, intuitive digital devices[33,34] become user-friendly even for digitally illiterate populations. With a likely future of a portable device (or more) in every home, young Asia particularly will be a driver of new applications of social media (see box).[35,36]

Figure 3

TOP SEVEN FASTEST GROWING INTERNET POPULATIONS
2008-2013

Internet penetration as of 2014 — % of the population who can access the Internet at home | Internet growth over 5 year period 2008-2013

Philippines — 39% | 531%
Indonesia — 17% | 430%
South Africa — 47% | 414%
India — 19% | 230%
Russia — 59% | 100%
Argentina — 60% | 87%
Vietnam — 43% | 82%

SOURCES:
http://blog.globalwebindex.net/internet-turns-25
http://www.internetlivestats.com/

LAGGARDS TO LEADERS
Indonesia has quickly integrated social media in its young society. In 2014, despite low Internet penetration rates, Indonesia ranked first in percentage of users with an account for Google+, Facebook and Twitter. Jakarta has been referred to as "the social media capital of the world" due to the number of tweets its citizens generate.

Asia Is Embracing Robotics for Social, Commercial and Industrial Use

A high comfort level with robots may mean that Asia integrates them in their homes and workplaces quickly. Recent years have seen significant innovation in robotics, including autonomous vehicles, telepresence robots and humanoid robots, with precipitous declines in cost. Where Western robotics development has focused largely on impersonal roles (e.g. in manufacturing and military), East Asia is also demonstrating their use in companion roles as colleagues, caregivers and pets.[37,38] With a rapidly aging population, Japan, notably, is actively preparing for a society inclusive of robots in varied roles as seen by a hands-on robotic museum for children,[39] the use of robotic servers[40] and tour guides,[41] and the first robot-staffed hotel.[42] Emotionally intelligent robots[43] are designed for customer service and ultimately to live with humans (see supporting videos).[44,45] For aging populations, these robots are anticipated to fill labour gaps and ease social burdens on families and the state. They may reinforce or undermine family norms such as filial piety.

The industrial robotic revolution, with leading adoption[46] in China and Japan, is likely to shape the location of manufacturing, with important disruptive social consequences for low-cost South and South-East Asian workers awaiting their chance for employment in global production supply chains. If manufacturing as a development pathway is no longer an option for these countries, their demographic window could present instead a demographic curse replete with underemployment and unrest, particularly where skewed gender ratios leave an excess of young men. It would also be a missed opportunity for attracting foreign investment, building new institutions and a tax base for needed social programs. These pressures are reinforcing the need to equip these populations for work in the new digital economy.

> **VIDEOS:**
> Japan, first market for social robot
> Pepper the emotion-reading robot
>
> The most advanced humanoid robot:
> Asimo

Virtual Work in Asia

Asia is capitalizing on the possibilities of the digital economy, leveraging competitive wages and Internet connectivity to provide virtual services to global markets.[47] Business process outsourcing is well established in the region (particularly in India and the Philippines), and there are signs of a burgeoning online, micro-task industry offering anything from transcription to personal assistance. Where recent decades introduced skill-biased technological changes to the economy, the new unbundling of tasks (see Economy study) is creating a range of lower value micro-tasks available to low-skilled workers (as well

as new forms of high skilled work). This could allow millions of Asians thought to be on the wrong side of the skill gap to join the global digital labour force and position Asia as a competitive supplier of new services.[48] It may also expose a greater number of workers to precarious employment, low wages and exploitation[49] in a race to the bottom, as micro-workers have no protections and little power to organize.[50] Although in some ways the task economy may be replicating online many of the features of the physical grey market, such as tax avoidance, Asian governments are inviting virtual work as a source of jobs and investment in their countries. In time, with online traceability and crowd-based reputation systems (like eBay), it is possible that these task economy platforms could improve hazards of the grey market (e.g. facilitate (individual) bargaining and protection against non-payment/inadequate product).

Telepresence robots (see supporting videos)[51,52] are further facilitating the virtual work transition by improving the quality of remote communication from home to office or to access work in other countries. Even in service tasks thought to require a local presence (e.g. a hairstylist), telepresence robots with dexterous arms could be a game-changer in jobs as varied as surgery[53] and cleaning,[54] enabling Asians to further extend

VIDEOS:
Working from afar:
Vgo telepresence robot

Telerobotic surgery:
Da Vinci telerobotic surgery

their low-cost advantage in new industries. In countries where emigration depletes human and social capital, growth in virtual work opportunities could enable more people to stay with their families and invest in their communities and institutions from within the country. With the means and the motivation to explore new technologies, Asian populations may have insights into new business propositions or ways of integrating these technologies in everyday life.

NEW ASIAN MODELS

As it navigates a period of rapid change, Asia is likely to develop unique solutions to complex challenges and opportunities that could be relevant around the globe.

The Internet and Data Analytics are Shifting Citizen-State Power Dynamics

Citizens are being empowered by the Internet to hold their governments to account, and governments are using the Internet to identify citizen concerns and build legitimacy. Within the context of growing smart censorship and monitoring on the web,[55] activists are leveraging the power of the crowd to tackle corruption and hold their governments to account. In India, the website *ipaidabribe.com* allows individuals to report bribery requests.[56] Crowds in China have successfully gathered thousands of pictures online to recreate event timelines to defend the wrongfully accused and expose corrupt officials.[57] Due to the ability of crowds to coordinate and take to the streets, governments in Asia have also begun to monitor social media, at times proactively responding to citizen demands.[58] There is also evidence of governments using social media to expand democratic participation. For example, in 2014 Indonesia's new president asked citizens to vote online to decide who should join his cabinet.[59] This new form of civic engagement and negotiated power could afford Asian states the mandate to enact difficult initiatives to address growing challenges. Some states, previously considered repressive, may gain legitimacy, even by-passing the traditional processes of democracy.

Asia Taking Advantage of E-Learning

Faced with a large skill gap, Asian governments and businesses are promoting innovations in e-learning.[60] Asia is the fastest growing market for e-learning[61] and interest in MOOCs (Massive Open Online Courses) is growing. Four of China's five most prestigious universities have joined MOOCs.[62] There is a potential for Asian universities to leverage free course material through MOOC content from schools like Stanford, MIT and Harvard, in order to provide low cost, high caliber education. Across Asia, primary and secondary education content is being digitized and many countries are distributing tablets in schools.[63] Rapidly expanding e-learning infrastructure (see box)[64] will enable continuous up-skilling.

VILLAGE SCIENCE an NGO dedicated to improving access to information in the developing world is delivering high-quality free educational resources to rural communities in Laos, Cambodia, Myanmar and Thailand. Using Rapsberry Pi (a US $20 credit card-sized computer), they are able to install educational resources in rural communities for about US $65 per school.
What might this initiative accomplish in 15 years?

FUTURE FICTIONAL VIGNETTE: Mobile devices in rural Asia
Sadia is 13 and lives in Northern Bangladesh in a village a full day's walk away from the nearest railway station, and yet she now feels as connected to Dhaka as to New York and Shanghai. It started when her father brought a smart device back from the capital as a birthday present. Sadia had begged her father for the device on several occasions, explaining that it was a necessity for a modern girl like herself. But when she finally laid hands on it she had a moment of hesitation, fearing that her father's earnings may go to waste if she should fail to learn to use it properly. But it had just one button, and as it came to life, the device used GPS readings to guess the right language for its new user. Quickly the device became a friend and mentor to Sadia. She learned to access content from the Bangladeshi education curriculum and to participate via telepresence in classroom discussions when the monsoon made the long walk difficult. Now, Sadia uses the device to interact with friends around the world, earn money through various microwork platforms, play educational games, and without fail, to read novels to her father every evening after supper.

Booming Asian Demand for Health care Fuels Innovation

Rapidly expanding demand for health care in Asia coupled with fewer constraints on research and development compared to the West could put Asia at the forefront of health care innovation. As Asian populations age and prosperity and health awareness increase demand for health options, investments in high tech hospitals,[65] home health care devices and new biotech[66] and nanotech[67] pharmaceutical innovation are growing. Combined with a relatively open business environment, these factors could make Asia a global provider of health care solutions. Asia stands to become a development ground for new health care tools, products and services (e.g. robotics for care [see box], 3D printed body parts,[68] frugal innovation,[69] innovation in casual settings), a significant exporter of products and services (e.g. remote diagnostics), and a global medical tourism destination.[70] It could also become a leader in integrative medicine by combining a rich history of traditional knowledge with Western medical approaches.[71]

PARO THE THERAPEUTIC ROBOT is a companion robot developed by the Japanese company Takanori Shibata. Sold since 2004, the baby seal robot is used in hospitals and extended care facilities where real animal companions are not practical.

What might therapeutic robots resemble in 2030?

FUTURE FICTIONAL VIGNETTE: Robotics developed for elderly care

As Ysu places the crocus bulb into the soil she is hit with a pang of sorrow. She used to garden with her husband before he passed. LEE, her assistance robot, empties the last bag of top soil and, reading Ysu's body language, immediately moves to help with her balance as she stands up. Following her to the kitchen LEE reminds her of the medication she should take with her meal. 'Daniel has just switched his status to available, would you like me to request a video chat?' asks LEE. 'Yes please.' Ysu enjoys her meal with the company of her grandson who has decided to telepresence into LEE from Winnipeg. As Daniel explains the events of his day he knocks over a glass of water with LEE's arms. 'Daniel, you're as clumsy as your grandfather,' Ysu says, half holding down laughter.

ASIA'S EXPANDING INFLUENCE

As Asia becomes freer to forge its own path, the rising influence of a large, young and more prosperous Asia will undoubtedly leave imprints on global culture through Asian policy institutions, Asian businesses and Asian populations with their own unique messages.

Asia's New Confidence Infuses Global Culture

As Asia rises, a fundamental change in how Asia views itself, and how the rest of the world views Asia, may take place. A rediscovered confidence would redraw what is possible for Asia, potentially reducing aspirations to emulate the West and ushering in a new era of regard for what is uniquely Asian. This could lead to different choices and behaviours at many levels within Asia, from what parents want their children to study in school, to choice of consumer brands, to how Asia projects itself on the world stage. It may also give Asia a new opportunity to reframe success along Asian lines, with a rediscovery and flourishing of Asian practices and cultural exports shaping global norms and values. Current examples include Bhutan's Gross National Happiness measure[72] and Asia's traditional wellness approaches.[73] In a world shrinking through communications technology, Asian cultures will have even more opportunity to express their worldviews in subtle ways.

Asia's Growing Influence on the Internet

Asia's rapidly expanding online presence will position it as a trend-setter in global Internet culture (See box below). Asia currently represents 41% of the global Internet population and is the largest regional e-commerce market.[74] Due to the user-generated nature of Web 2.0 and Asia's 60% share of the global population, a majority of the content generated online in 2030 will most likely come from Asia. Integrated translation functions will allow this content to be consumed globally, expanding the potential for Internet censorship beyond national boundaries or language spheres. Asian products will also gradually be consumed on platforms developed by Asian companies (see box[75] and Figure 4[76]). For example, the Chinese company Tencent has developed what is arguably the most advanced social media and mobile store app (see box), which is gaining popularity overseas.[77] Large Internet companies are also offering complete digital experiences, from devices to applications and social media platforms, integrated shopping services and home appliance monitoring.[78] As Web 3.0 comes online, the Internet of Things[79] will allow for real-time continuous tracking and the fusion of online and offline dimensions, permeating all aspects of life. This new Asian dominated Internet will be at the heart of a global creative economy and a knowing society.[80]

WeChat app was developed by Tencent, the 5th largest Internet company in the world. From a single site, it provides the comparable functionality of over a dozen popular apps and services (e.g. WhatsApp, Twitter, Skype, DropBox, Amazon, Google Wallet).

Xiaomi released its first smartphone in 2011 and became the 3rd largest smartphone maker in 2014. The Chinese company competes with Apple in the high-end market while also offering affordable devices.

Figure 4

ASIA'S GROWING WEB

BIG

Top 6 World's Largest Publicly Listed Internet Companies by 'Market Capitalisation' As of Oct. 1, 2014

Legend:
- Chinese companies
- American companies

BILLION $USD (y-axis: 100, 200, 300, 400)

Amazon (1994), Tencent / Google (1998), Alibaba (1999), Baidu (2000), Facebook (2004)

YEAR FOUNDED
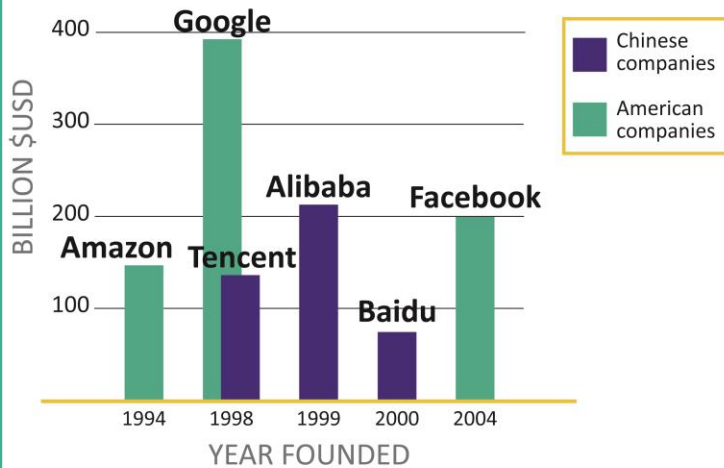
SOURCE: http://www.lgcnsblog.com/wp-content/uploads/2014/12/china_01.png

and INNOVATIVE

WeChat app, developped by Tencent (see above), combines the functions of over a dozen popular apps.

WeChat { Skype, WhatsApp, Instagram, Twitter, Google Wallet, Dropbox
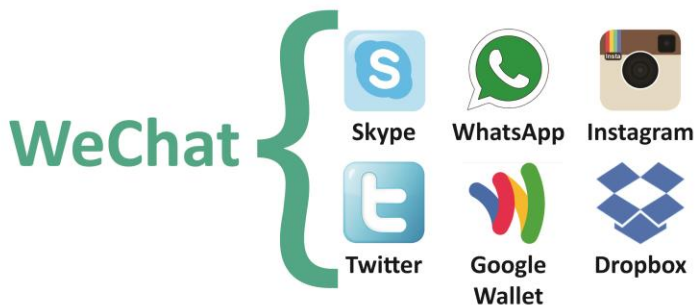
Policy Challenges and Opportunities for Canada

The rapid changes that may occur in Asia over the next 10-15 years will present Canada with a range of challenges and opportunities. This section highlights those that may be particularly surprising and unexpected.

RESPONDING TO ASIA'S TECHNOLOGICAL ADVANCES

The Rise of Virtual Work

Competition for Canadian workers will arise in the form of virtual workers using portable devices and telepresence technologies, a situation for which most Canadians may not be prepared. Just as manufacturing, IT and business process outsourcing are tapping into labour pools in the developing world, the use of microwork task platforms and virtual telepresence technologies are expected to lower geographic barriers across an expanding set of knowledge and service roles. In fields such as office cleaning or fruit-picking, they may compete with immigrants and temporary foreign workers already in Canada, limiting opportunities for vulnerable populations in Canada and the absorptive capacity for newcomers. Access to international virtual work could also alter migration decisions in favour of proximity to family and community and other lifestyle considerations rather than economic ones. International virtual work may require a rethink of existing policy instruments and motivate new international agreements around tax collection, work permits and credentials as well as the delivery of social supports (e.g. employment insurance, parental leave and pensions).

Preparing Canadians for a Restructuring Economy

As Asia pulls the world into the new digital and automated economy, Canadians will need to develop new skills to thrive in an era of reduced job security. The entry of large numbers of skilled and unskilled Asian workers into the global digital market for services will compete directly with Canadians in many previously sheltered Canadian jobs (see Economy study), leading to downward wage pressure and unemployment for many Canadians. New uses of artificial intelligence and robotics will also displace the need for human labour in many roles. Disruption to the labour market appears inevitable across occupations at all skill levels, from call centres[81] to doctors,[82] meaning that many Canadians cannot rest assured that they are

"safe" in any job. Economic restructuring will also bring productivity gains and new market opportunities, but it is unclear whether the gains will offset losses, or if they will be widely shared. Part of the policy solution may lie in timely identification of skills in demand, and education systems that can deliver them, combined with personal skills such as resiliency, creativity, financial and entrepreneurial skills that can help people adapt. Left unaddressed, a rise in Canadians' economic insecurity could drive a range of social and economic challenges, such as delayed family formation and home ownership, overworking or over-saving, indebtedness, harm to mental and physical health, illegal activity and social unrest. A significant reduction in living standards could precipitate a shift towards more survivalist values (as described on page 5, e.g. lowering trust and raising economic security as a priority over civil liberties).

FUTURE FICTIONAL VIGNETTE: Canadians taking advantage of the digital economy

Frank just lost his job. But during his twenty years as a youth care worker, he often gave teenagers tips on how to use artificial intelligence-enhanced job search services. Now he needs to take his own medicine to see what's out there for him. Perhaps this is an opportunity to shift his work-life balance and spend more time with his children, he reflects. Frank motions to his device and navigates to a digital employment platform. He tells the computer he wants to find a solution that would allow him to pull his son from day care for one or several half-days to save on childcare and not jeopardize his weekly bowling schedule. The computer immediately flashes several possible work-week schedules that would have him work for multiple employers via telepresence. Instant virtual interviews are available for thousands of postings for someone with his skills to work with youth in Caracas, Mogadishu, Islamabad… the list goes on. Thanks to instant machine translation and digital visa services to validate his expertise, Frank has just opened the door to a world of possibilities.

Social Policy Innovations for a World of Non-Traditional Work

In an employment-precarious world, Canada may require new social policy models to distribute market income and social benefits that have typically been tied to jobs. Canada's social policies assume that employment is the norm, and unemployment the exception. But an Asian-driven digital and automated economy raises the potential future of fewer and/or more precarious jobs and the prospect of a new class of virtual workers participating in international piecemeal work. This would limit the distributive function of employment (i.e. fewer people would have access to market income through jobs), as well as access to government or employer-sponsored benefits that are typically tied to employment (e.g. sick leave, supplementary health and disability benefits, employment insurance, skills training, parental leave and pensions). This may require reconsideration of how Canada delivers
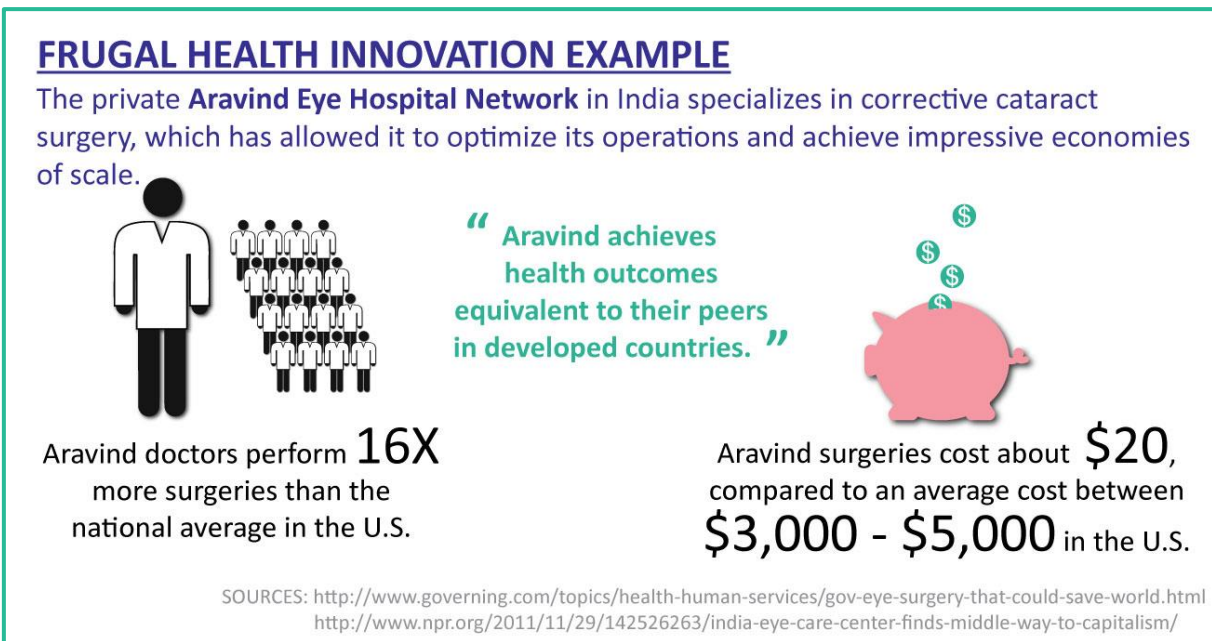
social security benefits and collects income taxes. The possibility of attaching social benefits to citizenship rather than jobs, of establishing a minimum income[83] rather than minimum wage, or of introducing luxury, wealth or health taxes, "sin taxes", and user fees in place of income taxes could be explored.

ASIAN MODELS CHALLENGE CANADIAN ONES

Asian Health care Innovation Becomes a Disruptor for Canada

If Asia becomes a global provider of health care solutions, Canadians may increasingly turn to Asia for their health care needs. For example, Canadians may access Asian diagnostic and treatment services remotely through telepresence robots, or they may seek new goods and services through medical tourism, courier or the Internet in cases where Asian options surpass Canadian ones. Having any portion of the Canadian public looking to Asia for their health care needs would raise public safety and equity concerns central to universal health care, whether it is low-income citizens utilizing questionable Asian services at low cost, or wealthier Canadians buying faster, better service than can be obtained in Canada. Should demand grow, there could be pressure on the Canadian health care system to either adopt, or regulate and fund Asian alternatives as part of the Canadian system. There may be pressure to lessen regulatory burden and fast-track approvals, or there may be an urgency to address the public safety implications (e.g. failed procedures, legal recourse, etc.) of differing international standards for Asian goods and services being sought by Canadians.

Figure 5

FRUGAL HEALTH INNOVATION EXAMPLE

The private **Aravind Eye Hospital Network** in India specializes in corrective cataract surgery, which has allowed it to optimize its operations and achieve impressive economies of scale.

" Aravind achieves health outcomes equivalent to their peers in developed countries. "

Aravind doctors perform **16X** more surgeries than the national average in the U.S.

Aravind surgeries cost about **$20**, compared to an average cost between **$3,000 - $5,000** in the U.S.

SOURCES: http://www.governing.com/topics/health-human-services/gov-eye-surgery-that-could-save-world.html
http://www.npr.org/2011/11/29/142526263/india-eye-care-center-finds-middle-way-to-capitalism/

Adaptive Authoritarianism May Become a Legitimate Governance Model

With enhanced digital capacity to listen, analyze and respond to public demands, single party governments and authoritarian regimes may emerge as a viable model for growth and stability. The next 10-15 years will be a period of rapid structural change with possible growing unemployment, food and water shortages and other threats to stability. Authoritarian states may have an advantage over democratic states due to a greater emphasis on longer term planning and different political stakes around difficult choices. Data analytics, artificial intelligence, sensors and the Internet will give them the tools and information to understand popular concerns without the need to consult citizens directly, allowing them to respond in a timely and customized fashion. For example, China now employs roughly 2 million Internet Public Opinion Analysts that monitor social media with the express goal of "stability maintenance,"[84] a demonstration of the Communist Party's increased concern with public approval.[85] The possibility that debate and stalemate over complex policy choices could paralyze multi-party systems elsewhere would further highlight the dexterity of alternative models. For failing democracies or struggling powers, the idea of democracy as the ideal form of government may fade in the minds of politicians and citizens alike. Democratic states may need to reconsider their strategies for promoting stability abroad, and change their approaches and language in international diplomacy, should the soft-power appeal of democracy diminish.

ADAPTING TO ASIA'S INFLUENCE

Asian Internet Laws Increasingly Relevant for Canadian Interests

As life moves online, Canadians will continuously have their identities and their physical world connected to servers in Asia. There will be a need to ensure this is a safe and secure experience. Social media, augmented reality (see box)[86] and the Internet of Things will connect billions of people and physical devices, merging the digital and physical worlds across the globe. Asian countries are beginning to play a larger role in Internet regulation and standards for web-based engagement to advance their interests. China recently hosted a world Internet conference where it promoted an international declaration to establish an "international

> **Augmented reality** technologies overlay information on to the user's view of the real world. These devices offer an interactive experience with any environment. **Watch the video.**
>
> Seamless interfaces to digital content could be merged with activities in the physical world, making Internet regulation ever more relevant to all aspects of life.

Internet governance system" that would promote the "Internet sovereignty of all countries" and "jointly fight cyber terrorism."[87] The development of such standards would have a direct impact on the nature of Canadian online engagement, privacy, security and potentially all aspects of life. At issue is not only the definition of Internet sovereignty and data protection, but, due to coupling of the physical world to the Internet, Canadian's financial, physical and mental safety.

Greater Competition to Attract Top Talent

Despite Canada's strong legacy as an attractive destination for immigrants, a rising Asia with rapidly improving living conditions could become a competitor for top talent. Canada might see a decline or return home of Asian talent residing in Canada, while the Canadian-born may also be drawn to increasingly important and liveable Asian economic centres in greater numbers. Immigrants contribute significantly to the Canadian economy by boosting the value of foreign exports and foreign direct investment; in research and development they are also over-represented in their contributions to Canada's patents.[88] Attracting foreign students has been a strategy for landing immigrants highly equipped to succeed in Canada. However, in the future, this pathway will be limited if greater awareness of Canadian learning institutions is not developed abroad,[89] particularly given the rising quality of Asian institutions[90] and the possibility that Asia will develop magnet cities that are clean, safe and "happening." As virtual work makes it possible to live and work in different places, new questions arise as to whether it is necessary or beneficial for Canada to attract people, skilled or otherwise, to reside in Canada.

Promoting the Canadian Brand: A Greater Role for Quality of Life

The need for Canada to compete will only grow, though its ability to attract immigrants and investments and to demonstrate influence on the world stage may be increasingly leveraged not by economic performance, but by quality of life. As Western countries face tighter fiscal constraints and lower economic competitiveness, other wellbeing factors are likely to become the basis for attracting immigrants and investment. Factors such as quality health care, education, and housing, a sense of safety and security, clean air, and attractive environments in which to live are likely to be more important. In many of these categories, Canada performs well already; maintaining them, along with a strong social safety net, will be more important in the future in order to put Canada's best foot forward.

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