Geography, Geographers and the Future Scenario: Malaysia

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Abstract. Since early 2000, four future scenarios have been generated to chart the development of higher education in Malaysia**.** The most recent future scenario for Malaysia's higher education was generated with the Fourth Industrial Revolution as its primary context and driver. Arguably, the Fourth Industrial Revolution represents new ways in which disruptive technologies are affecting educators, thus necessitating a redesigning of the education system and transform the learning and teaching delivery, as well as demanding the industry sectors to enhance, reskill and upscale talents. In this respect, geography as a discipline and geographers as the practitioners of this discipline need to adapt to the demands of the Fourth Industrial Revolution. The response to Fourth Industrial Revolution is indeed critical to ensure the relevance of the output and outcome of our efforts as geographers in the universities and in practice. The most critical element in geography that need geographers' attention is the idea of physical versus virtual mobility, brought about by advanced technologies. The paper concludes that while the Fourth Industrial Revolution would introduce new technology that would ultimately reduce the need for real (physical) mobility, real human experience, which is the core concern of geography, nonetheless need to be defended. Human experience through purely virtual mobility could not replace those accumulated through travel and exploration. *Google Sightseeing* is a preamble to travel and experience and not the final destination. Geography and geographers would continue to have an important role to play in enhancing the human experience in the Fourth Industrial Revolution period. For this to happen, strategic initiatives must be put rolled out now.

1. Introduction and Context

Any introductory classes on geography at the Geography 101 level in higher education institutions in both the developed and developing world would normally begin in a more or less similar manner, which is with a discussion on the philosophy underlying classical geography at its most fundamental level. Without doubt, these classes would dwell on the nature and essence of the discipline of geography from Eratosthenes's (276–194 BC) first usage of the Greek word for geography (*Geographika*) and Ptolemy's work on geography and astronomy in *Geographia*. Indeed, this ancient Greek scholar Eratosthenes and Ptolemy are generally regarded as the pioneers of geography in so far as their pivotal contribution in establishing the philosophical underpinnings and the practice of geography, respectively.

Past forward to the modern geography era, even after several industrial revolutions in the western world, in particular in Europe, the rudimentary elements of the discipline of geography are still intact to this day, that is geography is about traveling, exploring and investigating places in order to understand the geographic phenomena and cherish the "human experience" of various locations and places. Admittedly, in the present and future scenarios in the context of the Fourth Industrial Revolution, geographers have begun to grapple with virtual locations and places arising from the application of advanced technology. Specifically, how would geographers reconceptualize relevant concepts that have defined geography in the past in the emerging geography beyond artificial intelligence, robotics and internet of things. Indeed, while past industrial revolutions have influenced the development of modern geography that we know today the impacts of the Fourth Industrial Revolution on geography and geographers are expected to be far-reaching. Such is the changing nature of the discipline, be it in Malaysia or in the UK or North America for the

discipline of geography has evolved by way of the same intellectual traditions and disruptions via various phases of political and intellectual colonization and recolonization. Admittedly, the discipline of geography is also influenced by changes in other allied disciplines in the physical/life and social sciences. Now, once again, the Fourth Industrial Revolution, a western framing of development and modernization process based on advanced technology, is impacting and recolonizing Malaysian geographers in similar manner. The assumption that our understanding and practice of geography would be further influenced by the Fourth Industrial Revolution because of advanced technology is not a far-fetched one. In fact, it is moot question that need some examination. Why and how would Malaysian geography and geographer respond to the demands and pressures of the future scenario for Malaysia in a Fourth Industrial Revolution environment is the subject matter of this paper.

In this connection, one pertinent question to ask is: would our approach to accumulating knowledge and the deepening of the human experience through traveling and on the field be affected as a result of further advancement in technology that are defining the Fourth Industrial Revolution? In the past, we have argued against the emergence of what have been referred to as "armchair geographers", a particular breed of geographers, keenly thinking about the geographic experience without having to undertake any kind of fieldwork. Armchair geographers are equally important as practice geographers for the former are involved in theorizing the geography discipline. Unlike in the West, in Southeast Asia, in particular Malaysia, there are more practice as opposed to armchair geographers, primarily preoccupied with applying western geographical theories to Southeast Asian problems. Indeed, we could hypothesize that advanced technology such as virtual reality and artificial intelligence could result in the sudden re-emergence of armchair geographers in Southeast Asia, fully capitalising on advanced technology without even moving out of their technology-driven classrooms and offices. However, these are a different breed of armchair geographers. They are not engaged in theorizing geography. In fact, they are a breed of geographers who are relying on the internet of things and virtual reality rather than their personal experience on site or on location to build up a repertoire of human experiences and case studies subsequently be disseminated to students in lecture halls or through other teaching and learning platforms. It would be a great tragedy if geography, which is about exploring places to enrich the human experience, is side-lined in preference for "geography of the virtual mind and virtual experience".

This paper is about Malaysian geographers' response to Fourth Industrial Revolution which is critical in ensuring the relevance of the output and outcome of our efforts as geographers in the universities and in practice. The most critical element in geography that need geographers' attention is the idea of physical versus virtual mobility, the latter is embedded in the Fourth Industrial Revolution. Using Malaysia as a case study, this paper will assess the proposition that while the Fourth Industrial Revolution introduces advanced technology that would ultimately reduce the need for real (physical) mobility, human experience based on virtual reality cannot replace the experience and feeling of locating oneself physically. This oft-quoted expression, "wish I was there" on a holiday postcard underscores the importance of real experience. Can Facebook and Instagram take over the human experience of being in the field? Can virtual experience replace real experience? The contention here is that geography and geographers would continue to have an important role in education primarily to enhance the human experience in the future scenarios of Malaysia. This paper is an attempt to substantiate this assertion.

2. Methods

This paper adopts a discursive rather than an argumentative approach, with a primary focus to explore emerging issues of concern in the context of Malaysia, as discussed in the preceding section. The question framing revolves around the likely impacts on the discipline of geography and the activities of geographers in Malaysia as a result of future scenarios, which are generated around the Fourth Industrial Revolution. These imagined impacts in Malaysia, which are basically "educated guess", would be "tested" via literature

review and analytical thinking regarding the relationship between the discipline of geography, its practitioners (geographers) and the future scenarios driven by advanced technology. Arguably, the Fourth Industrial Revolution would have important implications for pedagogy and the practice of geography.

To undertake this task, there would be a review of the following (i) Schwab's Fourth Industrial Revolution, (ii) the documents describing the future Malaysian scenario on science and technology generated by the Academy of Sciences Malaysia and (iii) document analysis of the report pertaining to higher education and the Third Industrial Revolution prepared by the team from the National Higher Education Research Institute (IPPTN) based at the Universiti Sains Malaysia, Penang, Malaysia. In addition, informal responses from participants after the author's conference presentation on this topic were also taken into consideration in the writing this paper.

3. Results and Discussion

3.1 The five themes in Geography – Rationale and Relevance

While there have been significant changes in the manner we trained geographers and designed geography curriculum at the universities as a result of shifts in the framing of geographical concern vis-à-vis other related disciplines and more importantly of late, advances in technology, the basic themes in geography are actually relatively stable. However, [1] and [2] have elaborated on the changing approaches, emphasis and inter-connection of the various themes in a holistic study and investigation of geographic phenomena. While location, movement, region, place and human/environmental interaction, which are the broader themes in geography curriculum and research, have remained intact, notably, the focus and emphasis on each of these themes have varied over time depending on global, regional and local dynamics. In the final analysis, within the treatment of the above-mentioned five themes in Geography, the "human experience of being there" is given great importance. Notably, in view of this concern and faced with financial constraint geography departments in many universities would vehemently oppose any attempt to reduce the importance of fieldwork in their geography curriculum. The opposition to making fieldwork in geography as optional in the geography curriculum indicate geographers' indignant view against the production of "armchair geographers" in our midst. But, actually, we could provide a different account of this situation. On the one hand, our love for fieldwork as opposed to "armchair" intellectual work could be attributed to what [3] refers to as weakness at textual practice as opposed to a modern science in the "field". On the other hand, modern armchair geographers could be attributed to "geospatial technology which has allowed users the ability to travel without ever leaving home" [4]. Arguably, our weakness in textual practice and our affinity for advanced technology would result in a contestation between armchair and fieldwork. Past forward this situation, we are about to see more virtual geographers actively accumulating geographic images through their virtual journeys. Does Google Sightseeing give us the same thrill as being on the field?

In this paper, the primary focus would be on mobility and movement as the conceptual building block for geography. Since the invention of steam engine, time-space compression is one phenomenon that has greatly influenced the very foundation of geography [5]. But, in the Third Industrial Revolution, mobility and movement have reinforced the human experience that geographers are very focus on. As a result of advancement in transportation system, we are able to move and discover places far and wide. Factually, this advancement in transportation system has contributed greatly to the subsequent development of relevant theories and practices of geography. Arguably, therefore, the Fourth Industrial Revolution would result in new theories and practices in geography.

Indeed, the idea of the "Death of Distance1.0" in geography as a result of the improvement in transportation system and theorising and empirical evidences of "time-space compression" has contributed immensely to the development of geography since the discovery of modern transportation. However, "Death of Distance 2.0" as a result of the speed of technological change in internet and wireless usage presented geographers with greater challenges. Notably, the internet and wireless usage could be regarded as

disruptive influences in the development of geography and its practices as the internet greatly facilitated communication and exchanges beyond physical borders. This has resulted in the redundancy of physical constraints in geographic theorising. Arguably, as a result of these developments geography curriculum in both the developed and developing world needed a new discourse and text regarding the relevance of geography. Needless to say, the appropriate response to the above-mentioned development in the developing world trailed the developed world. It is acknowledged that the digital revolution (the Third Industrial Revolution), in particular the internet, offers a world in which transmitting information costs almost nothing, in which distance is irrelevant, and in which any amount of content is instantly accessible. Because of its global reach, the Internet has become the main platform for international contact, exchanges which include those of geographic in content and context. Increasingly, the internet provides a window in which anyone can display their geographic experience, geographic phenomena etc. for others to "experience" virtually. Admittedly, the internet offers a chance for people from different regions to swap information and ideas, thus bringing in a new meaning to regional geography and experience of distant places. In addition, the internet provides the means for people who are cut off from the world by authoritarian and oppressive governments through various censorships to tell their stories which ultimately affect the way we think of political geography and geopolitics. Undoubtedly, no other innovation has ever had quite such earth-shrinking and distance-compressing impact that greatly influence the curriculum and practice of contemporary geography. Viewed from the real human experience which is of great concern in geography, the internet and the digital revolution is a major detractor and disruptor. It can be argued that future geography would be similarly affected from the perspective of real human experience.

While the Second and Third Industrial Revolutions have put geography and geographers off course and off-guard because of the impact of the "Death of Distance", the Fourth Industrial Revolution with its very advanced artificial intelligence, robotics, virtual reality and the Internet of Things is predicted to blur further what geographers understood as the "human experience". To geographers, "human experience" is about being there, on location and savouring/experiencing the location as a result of movement related to it [6]. Increasingly, travellers and explorers (geographers) are "experiencing" places through Facebook and Instagram. The pertinent question to ask in this scenario: are these *Instagram-able* locations a useful fraction of the real experiences that we would expect to enrich the human experience in the Fourth Industrial Revolution era?

3.2 Future Scenarios – Malaysia

Since 2000 four future scenarios for Malaysia have been developed, one for the nation and three were focused on higher education. All four future scenarios are relevant to the development of geography and its practice in Malaysia. But in this paper, two future scenarios that were generated in the context of the Fourth Industrial Revolution are relevant to our present discourse.

3.2.1 The Academy of Sciences Malaysia's Scenario for 2050

The ASM's *Envisioning A Progressive Malaysia 2050* (figure 1) is a future scenario with disruptive technologies as the major determining influence. As scientists, the ASM envisioned a future Malaysia forging ahead along a development trajectory based on a fusion of the cyber, physical and biological worlds. It is argued the Fourth Industrial Revolution developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human [7]. Admittedly, taking the previous industrial revolutions as excellent examples and lessons to learn from, the Fourth Industrial Revolution would also fundamentally change the way we live, work and relate to one another [7]. However, there would be uncertainty in the extent of these life-changing impacts as there would be robots and artificial intelligence to intervene or mediate the human experience. Arguably, there would be intermediaries of the virtual nature between human and their experiences. Indeed, these are expected and

anticipated impacts that would strike at the core of Malaysian geography and geographers, as the human experience based on this scenario would be fundamentally contrasting to the nature and stage of the development of the Malaysian society. In other words, while we are forging ahead with the Fourth Industrial Revolution, our Malaysian society, which presumably is a major concern and preoccupation of Malaysian geographers are trailing in terms of our ethics, values and sophistication.

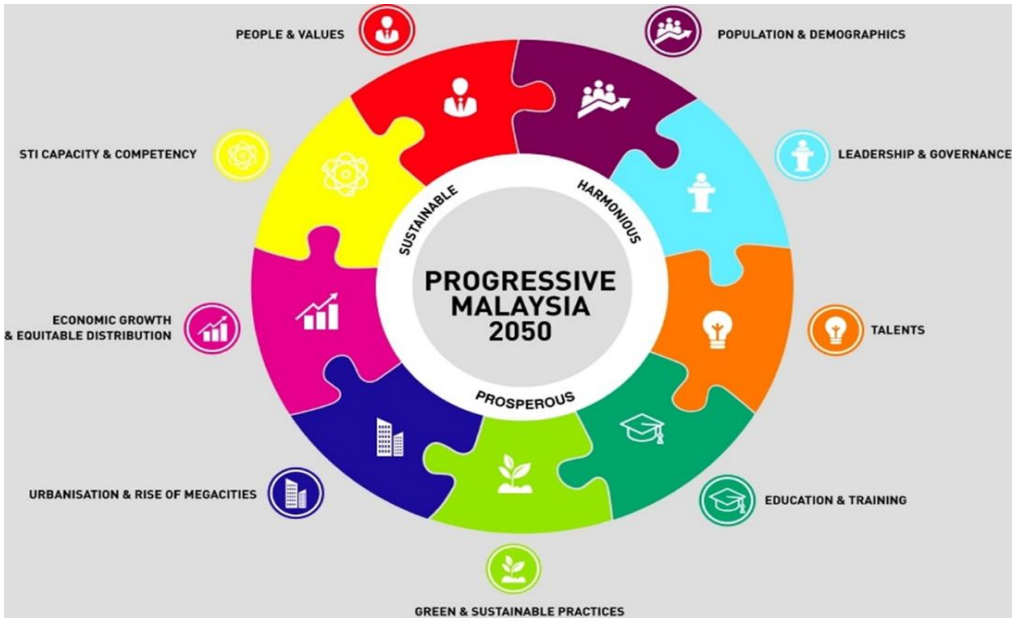

Figure 1. Academy of Sciences Malaysia's "Progressive Malaysia 2050".
Source: Adapted from [8]

But more importantly for geographers, Fourth Industrial Revolution and adoption of advanced technology such as artificial intelligence, virtual reality would affect the movements of people, which would directly determine real human experience of places and locations in Malaysia. A phenomenon that would emerge could be described as "one saw, but one did not feel from the heart". Thus, geographers would organise as a "community of practice" but devoid of certain values which determine this community. Arguably, a community of practice, which is a group of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly, would function superficially. This definition of a community of practice reflects the fundamentally social nature of human learning [9]. Presumably, as learning are undertaken via technology it is anticipated that technology would overcome all physical constraints in learning. Technology provides a wide range of tools that can support communities of practice [9]. But, where in lies values in this type of learning, which before the advancement of technology was deeply ingrained in the teaching and the practice of geography. Human experience accumulated through movements and interactions in geographic space underlined by certain human values and understanding would become peripheral to geographic understanding. Regional geography would ultimately be represented by virtual communication and exchanges, which is arguably not of the same level and intensity as real place exchanges and experience. Thus, the current situation whereby Facebook and Instagram are important medium for the transmission of experiences, would undermine real human experience.

Ultimately, we would be in a situation where there are more "armchair" than real geographers in our midst. Admittedly, as geographers, the desire to experience places and locations should be heightened because of advanced technology and not the reverse.

3.2.2 Ministry of Education Future Scenarios

The future scenarios generated in relation to higher education in Malaysia (figure 2) took into consideration the importance of IoT, virtual reality, artificial intelligence in the future development of higher education. More importantly, consideration is also given to the importance and relevance of humanizing higher education in the context of the Fourth Industrial Revolution. Such consideration is very pertinent to geography and geographers in our effort to underscore the importance of real human experience of places and locations. While in the future scenarios for Malaysia under the Fourth Industrial Revolution the teaching of geography and the research activities of Malaysian geographers need to be based and leveraged on technological development, the importance of real human experience must not be treated as of secondary importance or incidental in nature. In other word, the importance of the real human experience as it relates to the teaching and learning of geography must be one that is by design to produce the intended outcome and not leave these to by chances. This is explicitly noted in the Ministry of Higher Education's Framing Malaysian Higher Education 4.0 to address challenges of disruptive technologies.

Arguably, the design of teaching often integrates different theories of learning. Communities of practice is one of the ways in which experiential learning, social constructivism, and connectivism can be combined, illustrating the limitations of trying to rigidly classify learning theories. Practice tends to be more complex. With technology, would teaching of geography be less complex and very effective?

Figure 2. Malaysia's Higher Education and the Fourth Industrial Revolution
Source: Adapted from [10] and [7].

3.2.3 Major Concern Arising from Future Scenarios

Faced with the future scenarios as described above, Malaysian geographers need to be concerned with three issues, namely, (1) the changing geography of Malaysia as a result of Fourth Industrial Revolution, (2) the

geography curriculum at various levels to consider the challenges arising from the changing Malaysian geography, and (3) the practice of geography and the concern for community of practice among geographers (figure 3). Above all, is the present learning of geography adequate as future-proof current and future generations of geographers? Is the practice of geography, a future- proof profession?

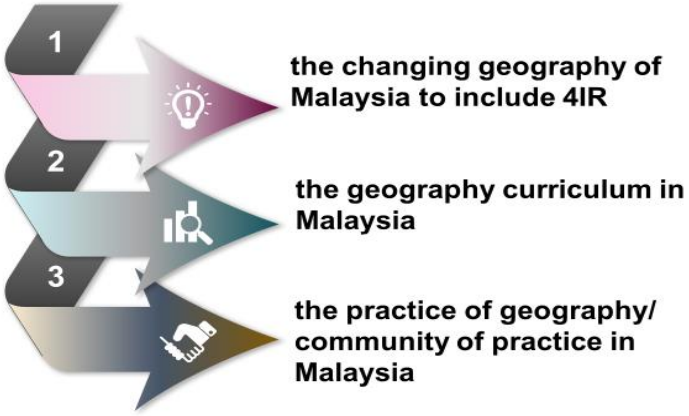

Figure 3. Issues of Concern

3.3 Strategic Initiatives

In the context of the future scenarios and in so far as these are relevant to geography and geographers, four strategic initiatives need to be implemented. However, these strategic initiatives are not mutually exclusive (figure 4). Geographers need to strategize Malaysian Geography, in terms of its curriculum and practices in the context of an increasingly disruptive world of Fourth Industrial Revolution, with artificial intelligence, virtual reality, robotics, internet of things aimed at enhancing and not replacing the human experience which is the core focus in geography. In so doing, it is important to humanise Geography focusing on the human experience. The Fourth Industrial Revolution is already affecting the way we live, work, interact and as such geographers should be concerned with how these developments would affect and influence the way we conceptualise future Malaysian geography and the research concern and the practices of Malaysian geographers. We should start conceptualising Malaysian geography to be relevant in the future context. Admittedly, over the years, we have not been very concerned about an important aspect of our profession – an organised community of practice, which is relevant to the future scenario for Malaysia. Appropriate actions that can help sustain and improve the effectiveness of communities of practice need to be identified and implemented, in particular a focus on value. It should be noted that communities of practice can be very effective in a digital world, where the working context is volatile, complex, uncertain and ambiguous.

Figure 4. Strategic Initiatives

4. Conclusion

The future Malaysian scenario based on the Fourth Industrial Revolution would affect the way we live and work, and more importantly the human experience which is at the core of our geographic investigation and concern. This has slowly been acknowledged and accepted as many official documents have underlined this as a fact of the Fourth Industrial Revolution. While this situation is increasingly becoming a forgone conclusion in Malaysia since the official adoption of the Fourth Industrial Revolution to drive Malaysia's economy and society, the responses among geographers have not been very encouraging. Articulation and deliberation of the impacts on geography and geographers have been very muted. Based on document analysis and a conference deliberation on this subject matter, it appears that Malaysian geographers have not grasped the emerging issues to be able to respond in a timely manner to the many changes and disruptions that have and continue to influence them and their discipline. The Fourth Industrial Revolution is yet another western-oriented revolution around which our future scenario is framed, and we are cajoled into believing that this revolution is opening up possibilities for Malaysian geographers to view and analyse the disruptions related to this latest revolution vis-à-vis the current societal development in Malaysia. But we should not be oblivious to the fact that the Fourth Industrial Revolution and all the technologies connected to this revolution would jaundice our understanding of the core concern of geography, which is human experience of places and locations through physical movements. In this context, Malaysian geographers should look at how the Fourth Industrial Revolution should serve Malaysian society and not the latter becoming subservient to the former and deprived society of the real human experience. This could only be done if we valued real human experience, real mobility and movements and not virtual reality, robotics, Facebook and Instagram, which are tools that should serve us. We should not become too dependent on these tools resulting in the side-lining of the real human experience which matters to geographers.

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