Introducing SEABOT:
Methodological Quests in Southeast Asian Studies

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[*Abstract*]

How to study Southeast Asia (SEA)? The need to explore and identify methodologies for studying SEA are inherent in its multifaceted subject matter. At a minimum, the region's rich cultural diversity inhibits both the articulation of decisive defining characteristics and the training of scholars who can write with confidence beyond their specialisms. Consequently, the challenges of understanding the region remain and a consensus regarding the most effective approaches to studying its history, identity and future seem quite unlikely. Furthermore, "Area Studies" more generally, has proved to be a less attractive frame of reference for burgeoning scholarly trends. This paper will propose a new tool to help address these challenges. Even though the science of artificial intelligence (AI) is in its infancy, it has already yielded new approaches to many commercial, scientific and humanistic questions. At this point, AI has been used to produce news, generate better smart phones, deliver more entertainment choices, analyze earthquakes and write fiction. The time has come to explore the

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possibility that AI can be put at the service of the study of SEA. The paper intends to lay out what would be required to develop SEABOT. This instrument might exist as a robot on the web which might be called upon to make the study of SEA both broader and more comprehensive. The discussion will explore the financial resources, ownership and timeline needed to make SEABOT go from an idea to a reality. SEABOT would draw upon artificial neural networks (ANNs) to mine the region's "Big Data", while synthesizing the information to form new and useful perspectives on SEA. Overcoming significant language issues, applying multidisciplinary methods and drawing upon new yields of information should produce new questions and ways to conceptualize SEA. SEABOT could lead to findings which might not otherwise be achieved. SEABOT's work might well produce outcomes which could open up solutions to immediate regional problems, provide ASEAN planners with new resources and make it possible to eventually define and capitalize on SEA's "soft power". That is, new findings should provide the basis for ASEAN diplomats and policy-makers to develop new modalities of cultural diplomacy and improved governance. Last, SEABOT might also open up avenues to tell the SEA story in new distinctive ways. SEABOT is seen as a heuristic device to explore the results which this instrument might yield. More important the discussion will also raise the possibility that an AI-driven perspective on SEA may prove to be even more problematic than it is beneficial.

Keywords: artificial intelligence, SEABOT, Research BOTs, new findings, new methods, big data, Southeast Asia

Ⅰ. Introductory discussion

The academic exploration of Southeast Asia (SEA), like that of other regions, stems from multiple needs and aspirations. The scholars who pursue such enquiries are often forced to painstakingly define and adjust their methodologies. Conferences in Busan have, over the years, investigated SEA from multiple angles. One theme has been

the ways in which events such as colonization, world wars, decolonization, and independence have shaped the terrain in which regional scholarship has been first conceptualized and subsequently attempted. It is in the spirit of such a reality that this paper offers a different type of theoretical perspective on the future modes for the study of SEA.

In the years since *Suvannabhumi* has been founded, the world has witnessed dramatic transformations involving the capacity to create, shape and interact with information. These developments are often defined in terms of digitalization and they are associated with rapid investments in technology focused on data, data analytics and artificial intelligence (AI). The claims associated with the advent and future of AI (including heralding a "Fourth Industrial Revolution") are as wild as they are plentiful, including the idea that it represents the biggest change in life on earth since the Cambrian era brought about many new life forms roughly 500 million years ago (Brynjolfsson and Mcafee 2018). It might be added that educators are likely to see AI come in relation to virtual reality (VR) and even augmented reality (AR). VR and AR may well do for future scholars what heritage and tourism have done for the study of history and culture. The impacts of these developments are widespread and are occurring in real time. Consequently, unlike the field of Southeast Asian Studies (SEAS), there is not yet a convention or organized modality for assessing both the future of AI and digitalization or its immediate and long-term impacts upon societies and the quality of human life.

Perhaps it is now time to define and identify the study of the scope, depth, breadth and significance of these changes as post-anthropocentric. This field (even the very metaphor of the "field", with its bias towards roots, cultivation and predictable development might not be sustainable in a world defined by massive data and AI) will necessarily be connected to the changes wrought first by software engineering and possibly last by AI itself, but actually focuses on the human interaction with these phenomena. This field is not to be confused with "digital humanities", which is often associated with projects to digitize a wide range of sources for academic use or correspondingly

highlights new possibilities in the classroom. Instead, this framework of study reflects the work of scholars who have understood that the concept of "modernity" (as well as "postmodernity") is inadequate to explain the current situation of both global and human development. Situating the Anthropocene as a new epoch in global history in which human interaction with the earth and its ecosystems is the dominant form of development enables scholars to explain many environmental and biological transformations which have proved increasingly relevant to many types of life. The designation "Anthropocene" is to be distinguished from "Holocene" (which is generally recognized as the current epoch, which originated roughly 11,700 years ago) which is the previous epoch of global time. To underscore the difference, the Anthropocene frame of reference locates environmental transformations, especially climate change, the massive rise in the human population and the extinction of large numbers of species as defining events of this historical era. It might be added that post-anthropocentrism builds upon, but also moves away from the ground- breaking approach to the study which has been articulated by scholars who advocate "deep history". The project to use neurobiology to redefine the boundaries of humanity's past (which by itself might have a significant impact on the study of SEA) is relevant to a future which promises significant alteration of some of the key features of the human condition. Post-anthropocentrism does not deny the basic conceptual insights of Anthropocentrism but opens up the possibility of reframing much of the past in light of new ways of thinking about the history of humanity.

That said, neurotechnology might well offer ways to help deliver unprecedented treatments for previously challenging disabilities, but it might also create new models for human expectations. Understanding the brain (and with it many constructive possibilities) opens up not only humanity's past, but theoretical discourses about "cognitive enhancement", brain-computer interfaces or what seems like a fantasy—sharing "full sensory and emotional experiences" online. This last vision belongs to Mark Zuckerberg while Elon Musk's pronouncements on AI and its applications and dangers may well have furnished us with one of

the most memorable soundbites of the decade (Marsh 2018). In practice, the rise of industries such as neurotechnology are likely to produce first broader questions about augmenting human capacity. In turn, the study not of how to augment humans, but which kind of choices are made across cultures could well open up whole new avenues of regional study. While it is beyond the subject matter of this paper, it might be usefully noted that making augmentation itself the focus of analysis might produce very different historical narratives and raise other questions useful for the explication of cultural and social trajectories. With respect to Southeast Asia, it is possible to foresee the study of comparative augmentations as a basis for analyzing the region's many cultures.

Again, the victory of Alphago over Ke Je is well known in China—an event that already has the stuff of mythology in the making as it appears to be decisive in the nation's stated drive to become the world leader in AI by 2030 (Addison 2018). Beijing will develop a 2.1 $billion AI part which will have a supercomputer, biometrics, cloud computing and high speed big data. The focus of the park will be Deep Learning. At this point, China is trying to catch up with 709 AI companies, which compares with 2905 in the USA (Kharpal 2018). If such developments come to pass, it might even be said that mastery of a board did indeed change the world.

However, post-anthropocentrism goes much further: it studies the interaction not only of human civilization with the natural world, but with the regimes of data, information and digital realities which it has produced. Inherent in this field is the study of humanity under the pressures of infoscapes which define many intellectual, ethical, historical and social realities. More important, post-anthropocentrism moves human experience from being the acting subject of the Anthropocene era into an object which is deeply affected by its realities. In other words, the scholar who works with a post-anthropocentrist framework will be interested in the development and application of regimes of information, but also how those data-driven entities continue to shape and reshape human identities. The field of post-anthropocentrism explores not so much the human impacts upon the earth's multiple environments, but the dialectical relationship between humanistic questions (which

certainly include the natural world) and the data regimes and infoscapes which increasingly define many facets of individual development and social life. That is, the student of post-anthropocentrism also works in tandem with political economists, philosophers, ethicists, anthropologists and adherents of other disciplines to define, assay and, ultimately, analyze forms of life under uses of information made up of data mountains and data oceans. (It might be considered that data has always been understood to have an instrumental reality. However, the independent use of data brings to the forefront many ethical dilemmas).

Furthermore, the domain of post-anthropocentrism means the human subject and object is studied within a distinct historical epoch. That is, historical analysis becomes directed to tracing the transformations of human life in relation not only to the natural world, but to the increasingly determinative structures of information and data. Such a path of study might be said to invert "deep history" which has used the development of the human brain to depict historical patterns (Smail 2007). Deep History is worthy of mention because it very aptly illustrates that not only is there more data, but what counts for important data is undergoing profound transformations. As Daniel Lord Smail observed the "new neurohistory" has the potential to alter our understanding of cultural change:

> Culture, in some fundamental sense, has been revealed as a biological phenomenon. Wired in neurophysiology, taking shape in the form of neural networks and receptors, culture can operate in a relatively mechanistic, quasi-biological fashion. The wiring can be explicit or intended product of cultural patterns, traceable to sets of social practices that shape children in predictable ways during the development process. The wiring can also be accidental, as in cases where the pregnant women ingest certain drugs or chemicals that are a natural part of their own culture—alcohol, nicotine, coca—and thereby unwittingly shape fetal development. If the historians of eighteenth- and nineteenth-century Europe knew more about the effect of caffeine consumption on fetal development, they might be able to suggest some of the large-scale, albeit wholly unintended, neurophysiological consequences of the rapid growth in consumption

> of tea and coffee. In either case, there is not much culture without biology. Culture is made possible by the plasticity of human neurophysiology. With this insight, we can finally dispense with the idea, once favored by some historians that biology gave way to culture with the advent of civilization. This has it all backward. Civilization did not bring an end to biology. Civilization enabled important aspects of human biology (Smail 2007: 154-55).

That meant in practice that the revolutions which occurred in the Neolithic period (agriculture, the domestication of animals, more settled existence, and so on) created a new "neurophysiological ecosystem" (2007: 155). Consequently, it became possible to generate new neural configurations, which might transform "brain-body states" (Ibid.). None of this might worry those with mastery over regional issues, but it illustrates the extent to which the very nature of data itself (in this case brain chemistry) can be made significant for the reconstruction of cultural history. Furthermore, the race for "Superintelligence", which already has taken a number of forms, suggests that the methods for the acquisition and interpretation of data will almost certainly go through transformation (Bostrom 2014).

Regional study will increasingly be shaped by both the breadth and depth of what might be regarded as new data in its efforts to uncover the multifaceted development of societies, economies and cultures amidst these conditions. Accordingly, the time may come to speak of *homo indicina* in which the human subject comes to be regarded as a kind of index for the data taken from it. Under these circumstances, the subject matter of SEA might not change, but attention would probably be given to how the region's peoples have had their lives impacted by various information and data regimes.

The dangers of AI having gone mad are well imagined, but the impact on the world of massive data and its applications are only just beginning to be understood. Even if it easy to acknowledge that data sciences may have yet to overcome problems associated with its size, storage, structuring and velocities, it is clear that "big data" has become a significant force in its own right. For our purposes today, it is the improvements in data management coupled with AI platforms which should change the evidentiary basis for most scholarly conversations. The unprecedented availability of information

about human beings, their societies, environments, the DNAs, genomes and other modes of information will reshape many scholarly questions—as it should. New patterns of virtually every aspect of human life will emerge for analysis. Older evidentiary models will almost be outflanked from the start. Just at the factic basis from colonial sources looks primitive to contemporary students of Southeast Asia, so too, in a data-driven world the epistemic basis for much of what is produced today will probably look feeble or under- researched by scholars drawing upon AI and related tools. And, yet, data by itself are not any more real or truthful than are facts. Some will recognize the idea behind the saying that "data will find a use" that data do not guarantee objectivity. In fact, one hardly has to look far in the commercial world to find business executives calling data a new "currency". Nonetheless, data rather than AI are understood to be essentially neutral and not particularly dangerous.

It might be useful to remember that we can recover a kind of genealogy of anxiety about the impact of technology on human life, especially if it is connected to robotics or other kinds of artificial intelligence. This is a strand of thought with which we are familiar: it might be said to originate with Mary Wollstonecraft Shelley's *Frankenstein: or Modern Prometheus* (1818), but became more prominent in the twentieth century. Possibly this strand of thought is best understood as a reaction to the Enlightenment and the naïve worship of technology which has accompanied modernity—and even mistakenly assumed to represent the best features of the modern world. With respect to robotics, possibly the first person to use the term was the Czech writer Karel Capek. Writing after the First World War, Capek, envisioned a future in which the relationship between robots and humans was problematic. Possibly this reflected the legacy of living through the First World War and not any kind of advanced knowledge about robotics. *R.U.R. (Rossum's Universal Robots)* (1921) was a play in which a robot rebellion destroys humanity. More generally, the fear of untrammeled technological development (possibly in Asia represented by Japan's rich tradition of the 'monstrous'—embodied by Godzilla) produces related discourses. However, some of the poignant anxieties about the future involve AI (this is the 50th anniversary of 2001). Much of

this has produced great novels and films (and many more that struggle to attain basic mediocrity) but for our purposes it has served to enhance anxieties about the use of many new technologies —especially AI. Therefore, from this point forward, a well-known kind of genealogy develops in science fiction that associates robotics (and later AI) with a human apocalypse, but the theme of profound change and human transformation has increasingly become the subject of public debate (Ford 2015; Kurzweil 2005) The legacy can be seen in many science fiction writings and films, but also very recently in the both the paper commissioned by the European Parliament ('Should we Fear Artificial Intelligence?) and published in March 2018 and the protest led by AI researchers that developed in April 2018 over KAIST's partnership with Hanwha Systems to build "Killer Robots".

To cite one example of the increasingly widespread use of AI in many avenues of public life, the work of diplomats is indicative of the broader transformations under way elsewhere. Diplomatic practice illustrates the truism that these technological developments will also alter current practices in commerce, urban planning, policy-making and the delivery of health care. Many in the international diplomatic community are familiar with the *Diplopedia* which was developed under the leadership of Secretary of State Condoleezza Rice. *Diplopedia* is an online, open source platform (for US diplomats and members of the intelligence community) which is not a blog or chatroom but "is a reference tool for State Department personnel who seek quick access to knowledgeable, useful, timely, current information on foreign affairs issues (US Department of State)". *Diplopedia* has been able to provide US diplomats with much better understandings of the kinds of local situations they encounter in their work.

Additionally, Seppe Verheyen, a researcher at Emirates Diplomatic Academy, has noted that data analytics are increasingly important for diplomatic practice (2017). For instance, Big Data can be utilized to "address the inefficiency and mismanagement of humanitarian aid by using geopolitical data and real-time mapping (Verheyen 2017: 1). In addition, diplomats can become more effective negotiators because automated content analysis will make it possible

for them to analyze political documents rapidly to understand the positions of other countries (Verheyen 2017)

Former UK Ambassador Tom Fletcher has argued that AI represents the "greatest opportunity and the greatest threat to the UN's objectives". In a report entitled "United Networks", Fletcher observed that AI could be mobilized to bring new approaches to older problems: these might include making existing UN services (particularly health, social and emergency) more efficient and proactive; improve storage and distribution networks (for disaster relief) and forecasting environmental and ecological trends. More interesting for us here, Fletcher understood that the use of robots could have a significant impact upon the delivery of government services:

> Allow routine administrative and operational roles to be learned by software agents ('bots'), which can prioritize tasks, manage routine interactions with colleagues (or other bots), and plan schedules. Newsrooms increasingly use machine learning to write sports reports and draft articles; … similar technology can produce financial reports and executive briefings." (2017: 35)

Ambassador Fletcher noted that the rapid increases in AI investment meant that the UN would do well to deal with the disruptions and problems posed by the technology's use. Fletcher recommended that the UN "lead a public debate and develop a code of practice on the use of Artificial Intelligence (2017: 37)". In addition, Fletcher argues for certification procedures for the creators of algorithms, developing a code of conduct for the use of AI auditing processes that involve machine learning and, more generally, developing international safeguards for the use of the technology (2017: 36).

To think about these developments in another framework, the realities of the digital world might be said to constitute a "hyperobject" which increasingly defines both our daily lives and the scholar's ability to explore SEA and other subjects (Morton 2010). Even more strongly, if data were originally created by instrumental rational processes, it might be worth considering as a "hyperobject"

now in its own right, which is not only the basis on which human life is examined and understood, but a changing series of entities which might become a source for activity in its own right (Morton 2010). Accordingly, this paper begins with the assumption that scholarship itself will change, possibly—if not probably—almost beyond our recognition. Therefore, to discuss methodological approaches to the study of SEA should consider the impact of the changing status, content and importance of information.

At the same time, AI can contribute to new forms of dystopian practices, including re-humanization. With re-humanization human attribution is given to performances by artificial intelligence or robots. To cite one humorous example, LG's new home helper CLOi was unable to speak or perform the basic tasks of anticipating the owner's needs and it was said that CLOi "had a moment". This gendered remark came during the CES press conference (Tomlinson 2018). Indeed, it might be said that one of the tasks ahead for liberal arts scholarship (and probably comedians and entertainers) will be to evaluate these attempts at "pathetic fallacy" in light of AI and Robotics. Whereas John Ruskin, the dominant cultural critic of Victorian Britain, observed that artist and writers often were engaged in the personalization of the natural world, future writers will doubtless re-humanize digital spaces and practices. This dystopian point of view might be understood as the inversion of things like "Cyberpunk".

Overall this paper focuses on AI because it is likely that the technology will redefine many areas of scholarship, including that which is devoted to understanding SEA. At the risk of stating the obvious, AI is already playing a role in SEA. We have probably all been using AI-related technology for years, but it might be added that within the region it is expected that its use will increase substantially. Singapore is among the cities which envisions improving the quality of life for its people by investing in AI to develop "smart cities" and the same might be said for the delivery of health care. Moreover, in January it was announced that Alibaba would utilize AI to establish a traffic control system for Kuala Lumpur. This would be Alibaba's first such service outside of China (*The Business Times* 2018). The McKinsey Global Institute published

"Artificial Intelligence and Southeast Asia's Future" (2017) for the Singapore Summit. This study explored the use and potential for AI in SEA, concluding that:

> AI technologies may have a disruptive impact on the region's economies—and its workers. Previously published MGI research estimated that currently demonstrated technologies have the potential to automate roughly half of the work activities performed in ASEAN's four biggest economies: Indonesia (52 percent of all activities), Malaysia (51 percent), the Philippines (48 percent) and Thailand (55 percent). These tasks currently generate more than $900 billion in wages (McKinsey Global Institute 2017: 1).

It should be clear that AI's impacts upon SEA are probably only just beginning to be experienced.

To pull these remarks together, this paper develops three ideas. To begin with, it calls attention to the possible need to reconceptualize some of the frameworks for studying SEA. Students of the region may not be as interested in the discussions regarding "deep history", the Anthropocene or post-anthropocentric, as scholars in other disciplines, but these concepts may be seen as increasingly relevant to regional study. Secondly, the paper seeks to explore the possible impact of AI and related technologies on SEA by postulating the development of SEABOT—a fictional product—and how its development would alter many of the practices and outputs for researchers. While it is to be emphasized that SEABOT is at this point an idea, a heuristic device only, there are very good reasons to believe that something like it could be invented. More important, SEABOT can probably be built with existing technologies. Predicting the future is dicey at best, but building it might be easier. After all, if the experiences of both the developments in Silicon Valley and the industrial revolution are in any way worthy, then it might easily be said that at any given time there are many "futures" out there, but only some of them are actually built (O'Reilly 2017). Finally, the paper explores both the problems caused by scholarship affected by SEABOT and makes some suggestions about how those who study SEA might actually begin to engage these issues in a proactive way.

There is one important caveat here: even though this paper does not attempt to predict the future it is based upon some common expectations for what the coming decades of the twenty-first century will look like. To begin with, there is no guarantee that the "Fourth Industrial Revolution" will fulfill its potential. AI would hardly be the first technology to raise massive expectations, which are not met. More dramatically, the idea that there will be "exponential growth" (Kurzweil 2005) leading to a set of dramatic changes in human cognition and ultimately to the "Singularity" is not understood here to be in any way inevitable. Nor is the assumption that the big data, the related analytics and data-mining will open as Google is currently is not one held by this author. Instead, there is every chance that we are headed into a very different future: one in which data are mined, harvested, traded, stolen, sold, resold and, most important, fiercely protected. It might be possible to imagine that the race of Superintelligence will continue, but the world will not be shaped by open platforms and a neutral internet, but divided into different data regimes. Indeed, there is a possibility that the social and political application of AI will lead to more restrictions for those who wish to use data for academic study. All of that said, there are still ample warrants to begin a conversation about the importance of data and AI and the future of SEAS.

Given the constraint that the future is inevitably unknowable, this paper describes the SEABOT Project for both scenarios (which might also be regarded as opposite ends of a spectrum). At one end, SEABOT is short-hand for the engagement with an open source online platform which would serve all researchers throughout the world. This platform would be like Google in that it would update itself with constant use from researchers, but also from the other sources of mass data. While this platform has yet to be invented, it could be with the right financial and legal support. In this instance, SEABOT is the engagement with that vast resource. From the other end, SEABOT might be a much more modest product, but one that is devoted exclusively for SEAS. This would be limited, but many of the AI and data-driven issues would still be quite relevant to the work of scholars.

Most important, perhaps, the spirit in which this paper is written is neither to predict the future nor to change research agendas, but it is to begin a conversation about the methods and possible paths which shape SEAS. The point here is that the use of AI and mass data has the chance to produce truly excellent and useful scholarship, but it will be incumbent on scholars and researchers in SEA and elsewhere to work to make the most of these changes. If those who study these subjects remain indifferent to many of these developments, they may eventually be surprised—and probably not in a comfortable way—at the changes around them. In other words, taking shelter in the ivory tower of academe is not a way forward; discussion, new ideas and creative innovation will be.

Ⅱ. Designing SEABOT

Imagine that it is 2025 and SEABOT has been in operation for about two years. It is a platform which enables scholars who study SEA to communicate, share information, receive assessments of their work in real time, and connects them to both data bases and data analytics. In addition, SEABOT is just one regional program because in other parts of the world similar AI drive platforms exist (i.e., MENABOT, AFROBOT, and so on.) and they are connected with one another. In fact, what is today called “the internet of things” enables them to communicate and provide continuous improvements.

Before going further, it might be useful to clarify both terms and challenges. SEABOT will be a network based on AI, which means that it can perform mental operations autonomously. The limits of that autonomy need not concern us here, but one key point is that AI programs can also learn independently. To make a wide generalization, “machine learning” refers to the ability that AI programs have to mine data, produce results and become smarter at it. The most famous example of this is AlphaGo which played thousands of games of Go with itself, acquiring more capacity as it did so. For those of the anxious bent, it is not clear what the limits of machine learning actually are. Deep Learning refers to the ability of an AI program to learn from new sets of data—even if those data

are unlabeled. Deep Learning will make it possible for a program to encounter new data sets and make decisions about them (a process reinforced by machine learning).

One of the reasons that AI has surged is that developments in Cloud computing has meant that vast amounts of data are now captured on a routine basis. Cloud IT makes it possible to manage and store the vast amount of data generated across virtually every digital product in contemporary societies. Much of the data are unstructured, but the capacity to capture, manage and store it have improved dramatically. Without these developments, AlphaGo could play Go (and Deep Blue chess), but their ability to impact human life would be nearly minimal. AI applications increasingly rely on software to analyze (Data Analytics) data which they first find through Data Mining.

This barely thumb nail sketch of AI capacity is made greater by platforms. A few examples of AI platforms which are available in 2018 might be regarded as precursors to what would be needed for SEABOT. Microsoft Azure Machine Learning is designed to simplify machine learning for business applications; Google Cloud Prediction API can be trained to predict what movies or products a user might like or it can develop recommendation systems; Infosys Nia is useful for those organizations which seek to find additional automations and innovations in order to continuously make core business practices more efficient; Premonition relies on the world's largest litigation database and since it can read more than 50,000 documents a second provides lawyers with the ability to ask questions which have not been asked before; Wit.ai enables developers by providing an open natural language platform; Vital A.I. develops efficient data models and then employs them across its architecture; Kai, designed to be domain specific, is a conversational platform (with a deep learning analytical tool set) which uses assistants and smart bots to meet the needs of a self-serve customer portal; last but not least, Receptiviti addresses emotional intelligence: it allows technologists to develop platforms which discriminate between their user's emotional and psychological profiles (Predictiveanalysticstoday.com 2018).

Possibly the best known, of course, is IBM's Watson. This platform has already had very successful applications and remains as cutting edge as those mentioned above. For example, with respect to medical research, Watson is deployed to work on cancer treatment. It draws (and learns from) upon a vast data base to improve treatment options for individual patients. The success of Watson might be gleaned from the increase in its usage: in January 2017 Watson could report that 9,000 patients had been affected by its recommendations; by 2018 the number is 113,000. The fact that some of Watson 's cancer treatment options in 2018 were found to be unsafe, illustrates the challenges facing doctors (who can also make mistakes). In fact, at Memorial Sloan Kettering Cancer Center (MSKCC), most of the blame was affixed on the ways in which Watson was trained. More important, perhaps, even with this setback MSKCC continues to use Watson as a kind of "second opinion" (Moon 2018). At the same time, it might be added that it now publishes the "Watson 100" which contained the best studies, posters, white papers and abstracts from 2017 (IBM Watson). Another potentially useful tool for scholars is Watson's Path which allows user to retrace the cognitive steps which it makes as it seeks to find solutions to specific problems.

Ⅲ. The SEABOT Platform

By 2025 it should be possible to design SEABOT, with many similar features (except it will not engage medical practice). SEABOT will be both a multifaceted platform which will be dedicated to producing constantly improving research projects for those interested in SEA. The first choice that the designers will face is whether it will be an open platform or a semi-open platform. Possibly it might start as open (especially, to enable users to see its immense advantages), become semi-open, and once popular require institutional subscriptions. For our purposes, we will assume that it is semi-open with some services open, but most requiring a subscription. The second set of challenges concerns restrictions on data. These are potentially numerous as they involve national security and intellectual property. Nonetheless, it should be remembered that

vast amounts of data would not be decisively affected by these considerations.

There are basically three different and essential features to the SEABOT Project: (1) a required platform for researchers who will do much of their reading, writing and reflection within the product's network; (2) SEABOT will also provide helper R-Bots which will mobilize AI to interact with scholars as they conceive, research and produce scholarship; (3) last SEABOT would also have a program which could independently research topics at the request of scholars, businesses and governments—and probably not in that order. Taken together, SEABOT might transform scholarship about the region, but as we will see do so in ways which may be unsettling. In fact, AI may well be at heart of future research endeavors, but ironic consequences which usually define human future are applicable here as well: by the time it is all said and done many of the problems will not be new, but quite recognizable to the readers of *Suvannabhumi*. That is, the research yield would almost certainly be of the highest quality, but it would be as predictable that the call to "de-center" and "diversify" SEAS would remain as great as ever (Goh 2011).

In any event, it is almost certain that while researchers will help to program the artificial neural network (ANN) which will make SEABOT possible, it will be an experience which is replicated by other regions, nations and interests. That is, SEABOT might be joined by equivalents for East Asia, Europe, South Asia, and other regions. Given that improvements which are anticipated for the "internet of things", it might be easily assumed that these platforms will communicate and update one another. Possibly more important, they will be continuously updated by non-research platforms which draw upon data sets for many other purposes. Consequently, when the SEA scholar sits down (or accesses it on his/her phone, while running in the gym) she will be receiving assessments and research paths which are informed by real-time global developments.

Devising and designing SEABOT will be a multifaceted task, but with adequate funding it should be a project which can draw upon work done in other areas of robotics, data cloud and AI. It is

already possible to foresee how this might be achieved and what kinds of resources will be required to make it successful. In this part of the discussion, it is important to identify the mission and purpose of SEABOT. Defining SEABOT's stakeholders should make it evident who might be anticipated to allocate resources to realize its invention. Last, it should then become clear what kinds of research SEABOT would generate.

SEABOT's ANN would be programmed by the region's policy-makers, researchers, business leaders and other educators. Their task would be to provide questions (connected to prefigured hierarchies of knowledge) so that SEABOT would know how to first focus on relevant topics, analyze them and then reply with information, suggestions and above all some kind of accessible data interpretation strategy. Scholars, then would have inputs which would define much of the interpretative apparatus for the data and, of course, the questions put to SEABOT could be of an infinite variety. With that, SEABOT would not only be drawing upon data oceans, but the yield from both scholarly work and other research products.

The SEABOT platform would become the most credible place for recognized research to take place. Scholars would be able to draw upon ongoing data-mining and data analytics, previous and current research and the larger world-wide research and data platforms. One of the immediate advantages is that SEABOT would be able to guarantee (until hackers figure out how to subvert it) the authenticity of scholarly productivity. Probably most people here have already used "Turn It In" and "Safe Assign", in evaluating the integrity of student papers. SEABOT would do this automatically because scholars working within the system would have their sources continuously checked, confirmed or found wanting. Moreover, this feature of SEABOT would have the added advantage of doing all of the citations (assuming that traditional research products are still in use) and even providing information (if needed) on the frequency of use and the way individual sources shaped the project.

SEABOT could also be programmed to recommend or not

recommend publication. This might produce only high yield articles, but a more likely scenario would be the publication with a series of easily grasped ratings (i.e., this is a 2-star paper or a 3-star, or 4-star) which might immediately place the significance and impact of the work. One might easily imagine why this would be attractive to universities, where the ability to accurately or reasonably assess publications is a serious challenge. Scholars might be assessed not only on the star rating, but also on the time it took for the paper to be researched, developed and published. This would probably mean the development of clear metrics for research publications (as opposed to looking at citations) in evaluating the productivity of a faculty member, researchers and research organizations.

SEABOT would be able to devise better ways to assess the research of scholars than we have at present. Rather than rely upon the crude application of data produced by citation indexes, SEABOT would be able to evaluate a scholar in relative terms. That is, SEABOT could draw upon mass data to first predict what a given scholar might be expected to achieve with the publication of an article. Rather than rely upon an impact factor or number of citations only, SEABOT could design metrics which actually reflect the reasonable expectations for a given scholar's research specialization. That is, rather than comparing a scholar's output with those over the whole range of academe, it should be possible to generate what is a reasonable output for a researcher based upon their fields of academic specialization. To be sure, great care needs to be practiced here, but it would enable those who wish (university administrators, grant-awarding bodies, and so on) to evaluate scholarly productivity with the contextualization of research practices, which seems to be increasingly lacking.

To provide an unlikely example, in Major League Baseball (MLB) fans are quite familiar with evaluation schemes which seek to assess how much value a player adds to a team. This is an inherently complex subject, but a couple of points may serve here because the evaluation of a scholar's research is ultimately about how much value has been added by his/her publications. Accordingly, baseball statisticians (sabermetrics—for those who follow the subject) have created a formula know as WAR (Wins

Above Replacement) to evaluate the productivity of individual players. If one wants to understand how much a given first basemen is worth, then that player's statistical output is compared with league average for a player at this position. The idea then is to see how valuable the player was by trying to ascertain the actual value of his hitting and fielding by relating it to his team's wins (also measured against that of other teams). Accordingly, after a great deal of statistical analysis players get a WAR number which denotes their actual value (it is then related to how much they are paid, but that is beyond our needs here). These numbers are used by both MLB and player's lawyers when negotiating contracts.

For our purposes here, SEABOT could do what university administrators cannot: namely draw upon vast amounts to data to set reasonable expectations for research productivity. Hence, a scholar who publishes frequently on Laos would be compared to similar scholars, rather than those (say who work on Japan and China) who at the very outset come with much bigger audiences and then, not surprisingly, quickly have many more citations and are therefore deemed to have a bigger impact and be more valuable. Obviously SEABOT could adjust these metrics for both discipline and age of the scholar. There are probably many better ways to devise academic metrics, but at present scholars have only resources which tend to produce very misleading results.

All told, SEABOT could produce the highest quality of research because the final product will be informed by the broadest set of intellectual considerations. These products will draw upon not only materials from SEA, but in comparison with other regions. The scholarship created by the researcher will provide the opportunity to make comparative study also within SEA. The scholar will have researched the question with reference to both contemporary ideas, but with much of the interpretative history at his/her finger-tips. Most important, perhaps, it will be as close to being comprehensive as possible.

The author will not have to worry about readership because SEABOT will immediately send it to the appropriate journal (or whatever has replaced it) for a review process (also carried out with

the assistance of SEABOT) can commence. More important, the work will be written within an ongoing review process made possible by the R-Bots. In short, a scholar who published (in the online sense) an article on SEABOT, would know that his/her work was of a very high quality.

Ⅳ. Research BOTS

One of SEABOT's functions would be to inform the Research Bots which engage the scholar as they write. A scholar would log into a secured cloud setting to write his/her article. As the author writes the Research Bots would make suggestions about what is relevant to the argument. These R-bots would have already mined the data bases and be able to instantly recommend 5 to 6 articles which have been published on that topic. Of course, they might be programmed for specific applications (cross-disciplinary points of contact, opportunities for comparative study, treatments of related problems in other disciplines or critical reviews).

These R-bots might also present the references in coded fashion (indicating their impact factors, qualities of the referral process, and even funding sources—if applicable). R-bots might also have an enormous source of factual information, which might be regarded as existing as established by convention and understood to be common knowledge. Indeed, the very prospect of an R-bot might make the idea of common knowledge out-of-date. Instead, there might be a CDS (common data source) which might be readily referred to by scholars. These data sources might be subdivided by field, discipline or nationality. Of course, these R-bots would also be programmed to evaluate fake news or its relationship in scholarship and they could troll a scholar's work for plagiarism. Even more happily, they might quickly organize all of the references, saving the scholar to work on more interesting or compelling tasks.

These R-bots would have long passed the "Turing test" in that they could simulate human intelligence. More importantly, their value-added would be their brutal efficiency and tirelessness rather than their forged humanity.

Ⅴ. A SEABOT 100

SEABOT actually begins with a global platform (following Watson), which would be funded by institutional subscription. This platform requires that scholars register (which initially would include uploading all of their publications). The platform would be many things: most critically for scholarship it would be a virtual academic workstation (VAW), where the researcher would read, acquire data and ultimately produce scholarship. The researcher will work in a transparent way—the entire process of reading, analysis and exposition will take place on this platform. Even if the researcher opts for research privacy, basic information about the scholar (publications, reviews, courses taught, educational background, professional networks and sources of funding) will be public information. Some scholars may object to this, but they will be gaining tools of unprecedented capacity. Universities will require membership as a matter of best practice; anything less than that will raise questions about the credibility of the institution's research output.

However, there is at least one more research yield which would be broad questions about the region. Researchers would be able to ask SEABOT questions—to have it generate data, reports and possibly even algorithms to pursue specific questions. However, the real benefit here would be the collaborative possibilities—across universities, nations and even regions. All of this may imply that the final academic product will change—from sole-authored books and articles to much larger team projects—many of which will furnish outputs as they remain ongoing. In other words, SEABOT will promote collaborative ventures, provide the possibility for continuous referred feedback and ongoing referencing, it is possible that the very nature of the scholarly product will change. Not only will the final product change, but the status of the author will almost certainly undergo transformation (especially if professors and researchers are continuously evaluated for their productivity over time. Under these circumstances—or those related to what is envisaged here—it would be surprising if the expectations for individual scholars were not substantially transformed.

In any event, just as Watson now produces the Watson 100 for medical research, it would not be too hard to imagine that in 2025 SEABOT would do something similar for SEAS. This yield (whatever number) would become a prize for individual researchers or research teams. More important, perhaps, it might begin to produce intellectual products which might be widely consumed across the SEAS ecosystem.

After all, the platform connects researchers across the world and allows them to publish their work at different stages of completion. In addition, it will enable them to generate a broader set of research products. This will include Infographs, VR options and illustrations. The possible and probable rich collaborations with those who develop online gaming can only be imagined.

Ⅵ. SEABOT's projected research yields

SEABOT might be expected to produce a range of research impacts which would almost certainly redefine the field of SEAS. To begin with, the scholarship generated by researchers working in conjunction (and with R-bots) will be transparent and also of a very high quality. Scholars will work with immediate conversations and references in mind and their assessments should be built in relation to any kind of well-established consensus. More important, perhaps, SEABOT follows other digital projects in that it should improve scholarly efficiency and therefore provide a greater quantitative output of high-end research. Furthermore, the larger scholarly agenda conducted by SEABOT itself (which ideally draws upon instant data sets, data-mining and scholarly analysis) has the potential to relocate the interests in researchers. One of the strengths of AI is that it has the potential to recognize trends (a critical trend for historians and social scientists) and unlike human scholars will be able to do so based upon the widest amounts of present data and much of what survived before it. More compelling, these trends and patterns will be made in spite of the many language barriers which face all students who explore SEA. It might be remembered that SEABOT should be able to draw upon orl

sources: since another strength of AI is speech recognition SEABOT should have the richest data available—if it is assigned a project such as determining the key factors which make up the evolution of kinship in SEA or if it is called upon to trace the impact of technology transfer to particular places in the region.

For those intellectuals and scholars who at once championed "the end of history" or as postmodernists proclaimed it, the end of grand narratives, it is possible that an AI application will be able to establish dominant trends which are easily the stuff of narratives. Obviously, this would barely be the end of the story, but it is not too hard to imagine that the results generated by SEABOT might result in challenges from academics and the articulation of new scholarly priorities.

One more thing to consider: the use of SEABOT will almost certainly be to forecast the region's future. This means that the disinterested study of the region's history and culture will now be carried out within the same platform which governments will use to try to shape the future. Accordingly, SEABOT will almost certainly generate current knowledge, which will not be tied to a particular domain. The divides between policy makers, educators and scholars (to name a few) will not be likely to survive. Instead, SEABOT will connect these disparate groups when the R-Bots make their suggestions and offer feedback.

Ⅶ. The impact of SEABOT on SEA

The impact of SEABOT on the region is a bit harder to gauge, but it may be an afterthought compared with the decision to develop it. That is, the potential for a data-driven regional research program which would provide valuable information for policy-makers, journalists, educators, economists, business leaders and politicians is obvious. The outputs of SEABOT would immediately be useful, transparent and stimulating for SEA leadership. In fact, SEABOT—or something like it—could be the instrument which ASEAN might use to become a more powerful block.

Accordingly, SEABOT (or a program like it) should be a project which ASEAN might endorse and promote. Since one of the advantages of AI is pattern recognition: SEABOT generated scholarship may well find and exhibit the region's common characteristics. It might make it easier to follow the path articulated by Victor King: to concentrate on culture and identity thereby "giving us the capacity to examine ASEAN as a segment of the global system" (2016: 38-39). That is, the use of SEABOT might facilitate the exploration of the region, building scholarship on both its cultures (which includes those outside the borders of ASEAN), while depicting their contributions to the political identity of SEA.

In order to realize SEABOT the region's key universities, think tanks, ministries and business leaders could all be involved. These entities would provide the key consultants for the development of the neural network which would be the basis on which the AI applications mining data is constructed. In addition, ASEAN could develop protocols for the use of data which would shape the terms and content for SEABOT's analytical capacity. SEABOT, in both its development and output, would be the basis for region-building. Again, not only would scholarship be affected, but the very basis for regional vocabularies and identities would almost certainly change.

One more consideration: the development and output of SEABOT would be a huge asset in the classroom. At a minimum, it would be a platform for providing information to students (at virtually all levels), but it would also open up a number of pedagogical possibilities. For instance, by drawing upon SEABOT it would be possible to teach thematic courses with students from more than one university. This can already be done, but it would be much easier and possibly become a common practice. Again, it would also be attractive to have classes with students both in and out of SEA. At the same time, the possibilities for the uses of both VR and AR in the classroom are already significant and require little explanation here. The possible combination between SEABOT and VR and AR could carry the teaching of SEAS to a very high standard. It is sufficient to say that the resources provided by SEABOT, would almost certainly facilitate the development of these pedagogical tools.

Ⅷ. The impossibility of an "Autonomous History"

The possibility of developing SEABOT or something like it raises a host of potential problems for students of SEA. Related problems will be experienced in other disciplines, professions and industries. Scholars who have devoted their lives to studying the cultures, languages and history of the region may believe that the advent of AI will have the same effect as the emergence of digital humanities and social sciences, but, in fact, it is more likely to be much more disruptive. In particular, it is possible to anticipate that the negative impact of AI and SEABOT will require significant ethical reflection (and action), questioning of new and suddenly insurmountable orthodoxies and profound inequalities with respect to resources. Teachers and scholars will almost certainly find their immediate jobs altered, even if in ways that are difficult to see with any precision. For our purposes today, it seems clear that the impact of AI on the study of SEA will present a new set of challenges.

To begin with, AI raises a number of ethical questions which will surely be the case for scholars. Data-mining itself raises issues about privacy and whether human subjects have control over the data they generate. These are fairly obvious problems, but they can be extended to communities, cities and nations. As long as AI produces comfortable self-driving cars and better rail transport this is not a problem, but when it encroaches into other domains of human life its impact might not be as positive.

AI-generated research about the region ideally will be carried out with the prospect of moving SEA forward and improving the lives of its peoples. However, there is no guarantee that this will be the case. Instead, it is quite possible that the research trends will be shared selectively or reflect from the very outset political or even commercial agendas. The very recent attention that Cambridge Analytica (and Facebook) received should not have shocked any political establishment, but it remains the case that the same data-driven technologies could well be used for commercial purposes which are even more exploitative. For individual researchers, then, the ethical issues of engaging with AI and yields based upon the aggregation and mining of vast mountains of data pose some new

dilemmas.

A bigger challenge may be preserving the diversity of SEAS in the face of technologies which might prove to be homogenizing. SEABOT will work over the internet and it will be available for all to access, but the key point is that it will likely be backed up by policy-makers, forecasters, commercial interests, think tanks and universities. While it is beyond the scope of this discussion to depict these realities, it is clear that the institutional framework supplied by universities alone which supports SEAS has been and will be critical. SEABOT will be backed by schools which believe that they are in a race to compete in the global knowledge economy. In other words, for those institutions who tout research productivity (now nicely made vivid by Citation Indexes and hiring big name scholars) in the name of being a player in the global academic world, the attraction of SEABOT will be as obvious as it will be irresistible. Universities (and other entities) might be offered the chance to participate in SEABOT, which means that their scholars would access it and contribute to it. After all, scholarship with SEABOT's stamp will guarantee a level of excellence and participation in an elite club.

For academic administrators, the prospect of a SEA-devoted platform which at once improves the quality of research, be alert to new methodologies, draws from the data oceans, defines qualities of scholarly achievement, evaluates regional and global relevance and guarantees academic integrity will be hard to pass up. Assessing faculty research projects will become evident. Universities will also benefit by drawing upon SEABOT as a source for innovative teaching and, in some cases, for new outreach possibilities. More generally, AI will be used for many educational purposes; already universities in Singapore and Malaysia have begun to experiment with predictive software, which might be used to guide interventions that can prevent dropouts (McKinsey, 2017: 23). In addition, if the observation that McKinsey made in 2017 is apt, then institutions will increasingly adopt data-driven forms of management and decision-making (2017:2), then it is easy to imagine that academic administrators and researchers can anticipate an environment in which analysis is driven not only from internal performance measures, but might be found in data bases.

Above all, the universities that have their scholars invested in SEABOT or a similar platform will see it as an essential component of scholarly production. Scholars, whose universities may not have made such a commitment, will be at a significant disadvantage. In short, those entities that make investments in projects that will draw upon AI (such as SEABOT) will be in a separate space than their counterparts; in SEA it is likely to exacerbate the differences between the haves and have nots.

Ⅸ. Disrupting the disruption: Emerging ethical imperatives for SEAS

The idea of positing a hypothetical SEABOT was to illustrate the extent of changes facing scholars all over the world—and in this case, SEA. SEABOT, as such, may never be invented or designed, but it would be naïve to think that these technologies will not have huge impacts upon the region. Consequently, it is hardly premature for scholars to consider forward-looking approaches to a changing intellectual landscape. Technologists (and some commercial leaders) have spoken about AI and related topics as "disruptions" because their development disrupts the ways in which many practices have been carried out. This paper sees the use of AI as potentially positive, but it will also insist on disrupting the disruption. As a result, it makes a few suggestions for discussion and possible action:

- Design and identify protocols for management of data, data-driven research and AI-related research for SEA (and for SEAS). These guidelines might then apply to SEAS and related disciplines;

- Insist on preserving the integrity of SEAS, particularly with reference to its research genealogies, methodological quests and above all, its diversity. (The dangers posed by homogenization would be great—and possibly attractive to many);

- Considering some of the dynamics of an AI future when discussing SEAS methodological issues. That is, like many

academic fields, an absence of methodological consensus exists in SEAS. Debates about how to study the region will undoubtedly continue, but it makes sense to see how many of these questions will look in a world in which many evaluations will be data-driven;

- Be alert for opportunities not only to improve teaching, but to produce university graduates with the soft skills useful in a digital world. Many jobs will be at risk because of AI and robotics, but it will take humans to develop the algorithms, manage the software and set the research agendas;

- Develop a consensus - if possible - on how AI might be used to improve SEA itself. Technological change does not inevitably mean equal improvement for all. Instead, there is a real possibility that it will produce profound — indeed, almost unimaginable inequalities. Therefore, students of SEA (and other regions) and other leaders should think quickly and carefully about how the use of these technologies will impact the region; accordingly, there is now ample warrant for developing some type of charter or something which defines the legal and professionally ethical boundaries for the application of AI. At the same time, any such discussion should begin with the stated assumption that AI has the potential to be an instrument which might foster social improvement, regional development and find new solutions to pressing environmental and ecological challenges;

- Regional scholars might consider adopting a post-anthropocentric standpoint or at least one which is sensitive to the changes which will almost certainly accompany AI and the use of big data in analyzing their subject matter. Acquiring a post-anthropocentric view point does not mean abandoning other scholarly priorities, but it does enable a researcher to become sensitive to the ways in which big data (and the related informational products) are increasingly impacting peoples in Southeast Asia;

- Of course, it could be the case that restrictions on data and open source platforms preclude the adoption of a

post-anthropocentric perspective. That is, SEA remains essentially closed (with many countries falling on the wrong side of the digital divide) and does not benefit from the fruits of what will become an increasingly efficient global knowledge economy. If so, scholars should rally their efforts to more open conditions for the dissemination of data, information and, yes, scholarship;

- Researchers in the humanities and social sciences might also look to AI programs for better ways to evaluate scholarship than those which currently exist;

- Last, we have all benefited from the BUFS/ISEAS events which have brought together a very interesting group of scholars to discuss the region and our approaches to it. This last suggestion is that the BUFS/ISEAS collaboration be extended to the creation of SEABOT in that it could become the organizer for a project which could reshape research about the region.

Advocates for the internet-based innovations have frequently spoken of the positive but disruptive possibilities which often mean that traditional modes of business have been made out-of-date. While many of these transformations may well be positive, some are likely to banish many forms of activity to the margins of many societies. By exploring these suggestions (and calling for more) the hope here is find ways to benefit from the emergence of AI, while also "disrupting the disruption".

Ⅹ. Conclusion

This paper has attempted to suggest that the recent advances in AI, data-mining, data analytics portend to a future in which SEAS is radically transformed. It has advanced few ideas in order to suggest the extent to which SEAS (like other areas of study) may be presented with both new opportunities and challenges. One technologist recently regarded history as having a kind of blinding effect. Tim O'Reilly observed that when "the past is everything you know, it is hard to see the future …. when we realize that the world has moved on we can understand that we are 'stuck in the past'"

(2017: 95-96). At this point in time the view of the future offered here has been developed to create a different type of discussion to explore methodologies for SEAS. Nonetheless, if the twenty-first century is to be remembered in relation to *homo indicina* then it follows that the questions, subject matter and methodologies of probably every academic discipline will have to change. Of course, it may not come to all that, but this paper has been written to stimulate thought and discussion about what at a minimum appear to be very powerful trends which are impacting on SEA and other parts of the world.

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