Science Communication in Urban Thailand:

Issues and Challenges

Saowanee Chinnalong

Submitted in accordance with the requirements for the degree of PhD.

The University of Leeds
School of Philosophy, Religion, and History of Science
Centre for the History and Philosophy of Science

June 2015

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

Acknowledgements

First and foremost, I would like to express my sincere thanks and gratitude to my supervisors, Professor Graeme Gooday and Dr Martin Seeger. I would not have finished my thesis without their guidance and encouragement. Both of my supervisors have been supportive and patient, they have devoted their time and expertise to me and have put up and cheered me up with the challenges that kept turning up during my PhD. study. I am grateful for the guidance and thorough comments that my examiners, Dr. Felicity Mellor and Dr. Emma Tomalin have given me. I would also like to offer special thanks to, Dr Jonathan Topham and other lecturers in my department who has given me much useful advice.

I would also like to offer thanks to my family: my Mum, my brother Theerapong (Nong A) who had not been able to be in this world to witness the success of my thesis, and my grandma – for their love, and support. Huge thanks go to Phannaphat Phromphan, Elizabeth Bruton, Rebecca Bowd, and Thomas McMeeking for their academic and moral support.

Abstract

This thesis examines the key characteristics and challenges of science communication in contemporary urban Thailand. I argue that one key characteristic of science communication in Thailand is the significant role of the Science-Buddhism dialogue in public accounts of science, and I examine the vital role of media in this dialogue for the Thai middle-class. By tracing the history of science communication in urban Thailand, I suggest that the Science-Buddhism dialogue has long been engaged in the Thai cultural landscape, with political meanings since the 19th century. However, I argue that in contemporary Thai society, the key purpose in the dialogue has transformed from political aims to offering comfortable messages about the superiority of Buddhist cosmology. I argue that the dialogue has recently shifted a little: while demonstrating the compatibility between scientific knowledge and Buddhist teachings, and concluding that Buddhism is superior to science, a new highlighted theme is a focus on the individual beliefs of one Western scientist: Albert Einstein.

In this thesis, I explore this new highlighted theme in popular depictions of Einstein, developing an understanding of his role in the Thai middle-class view towards science. Clearly Einstein is a scientific world celebrity whose biographies contains many myths created mainly by the American press. However, I show that in the Thai popular account, his fame arose instead from his alleged connections with Buddhism portrayed by the Thai press. I show that Einstein's supposed commitments to Buddhist teaching are tenuous, and difficult to authenticate.

The middle-class and the media's significant interest towards a Buddhistized Einstein in the Science-Buddhism dialogue is grounded in the Thai public's interest primarily in non-economic cosmologically-oriented science. This has become a significant challenge for the government trying to engage the middle-class with economic forms of science that can help to develop industrial growth. A key challenge facing the government trying to motivate this indigenous form of Thai economic science by harnessing it to nationalist goals and associations with specific

monarchs, is the middle-class's significant interest in a non-economic view of science based on a Buddhistized Einstein. These challenges have generated an inevitable tension between the government and the middle-class, leading to the government's perception of the middle-class as being cold to science. I suggest that one possible solution to ease the tension would be for the government to take a less-secular approach toward science by engaging with the Science-Buddhism dialogue to raise it to a more intellectual level. By that means we may hope that the government could succeed in creating a productive indigenous form of Thai science with the middle-class's support.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

NSM: The National Science Museum of Thailand

NSTDA: The National Science and Technology Development Agency

NSED: The National Social and Economic Development

NSTI: The National Science, Technology, and Innovation Office

Note on Thai words, system of Romanizing and referencing

My thesis follows the most updated version of Romanizing launched by the Thai Royal Institute in 1999. This system focuses on transcription, not the spelling.

Thailand uses Buddhist calendar which started from the death of the Buddha; the Buddhist era is 543 years plus of the Christian era, e.g. 2012 CE is 2555 in Buddhist calendar. However, I use Christian era in Thai publications in my referencing.

The Thai books titles in my thesis are translated to English by me or by their own authors (if available). For my own translation of books titles, I use square bracket after the Romanized titles, e.g. *Wittayasat Mai Lae Phrasi-an [Modern science and Buddha Maitreya]*. If the books have titles in English, I put them in round bracket, e.g. *Thitsadi Samphatapharp (Relativity for the layman)*.

Chapter 1: Introduction

'Earth is under attack – wet gel has landed.'[1]

'Not alien droppings after all, just cooling gel.'[2]

The above headlines have to be understood as a critical response to the reports by some Thai-language tabloid newspapers regarding the 'jelly-like' rolls which were found in various places throughout Thailand in May 2006, and believed by many Thai to have fallen from the sky. For some the gel-like objects were seen as sacred objects worthy of worship. The tabloids' reports gave colourful descriptions of the veneration of these objects without any attempt to critically investigate their origins. The incidences attracted considerable public attention and were featured on several tabloids' front-pages for nearly a week. Eventually the government decided to organise a press conference during which it was confirmed that the objects were fever-cooling gel sheets, and not, as many Thais seem to have believed, living creatures. These events, together with the way they were reported in Thai tabloids, are revealing of Thai beliefs about nature and the supernatural.

Many Thais have a strong interest in anything that is perceived to be an unusual occurrence in nature; many Thai people tend to worship unusual objects and signs.[3] At the same time, these practices reflect the Thai saying, 'Mai Cheu Ya Loplu [Although you may not believe in the supernatural, do not disrespect it.]'. The saying demonstrates the practice of putting more weight in faith rather than the investigation of facts. These

---

[1] The Nation. Front page. 15th May 2006

[2] Bangkok Post. Front page. 16th May 2006

[3] *Thairath* presents this kind of news regularly. For example, 'Weird Turtle' *Thairath,* 23th July 2002 p.19, 'Weird Baby with 24 fingers and toes' *Thairath*, 2 October 2003, p.1 and 19

kinds of incidences also point to a reporting style of Thai newspapers that the Thai government is concerned about. Some influential Thai newspapers, especially tabloid newspapers, often present these unsubstantiated kinds of incidences as supernatural without offering a scientific investigation or point of view. These occurrences also reflect social class differences and various educational backgrounds. Such headlines express a derisory sense of upper class superiority toward the tabloids' coverage. Thai English-language newspapers, especially, have a main readership consisting of highly educated middle- and upper-class Thais many of whom hold some form of Western education. In addition, the report also reflects a sense of concern over the national pride as expressed in the following quote: 'Before the incident could become more embarrassing for the whole nation, experts yesterday pointed out…'[4] Finally, since these reports appeared nearly a week before any official investigation was communicated to the public, this episode shows a lack of an official government mechanism for responding to urgent matters requiring scientific comment. Because of these events, the Ministry of Science and Technology intervened, establishing a new organization, the Thai Science Media Centre in order to supply an official response to such incidents. This unique incidence drew my attention to science communication in Thailand.

Another phenomenon, which began years later, was the extraordinary sales figures for the popular books, *Einstein Phop Phraputthachao Hen [Einstein Found, the Buddha Had Seen]*. The book, published in 2007, sold more than 200,000 copies, making it one of the bestsellers in 2008 and 2009. To provide context for these figures, the Thai language edition of the *Harry Potter* series was regarded as one of the most successful

[4] 'Earth is under attack – wet gel has landed.', The Nations, 15 May 2006

books in terms of sale figures in Thailand; each book in the *Harry Potter* series sold around 200,000 copies.[5] I believe the sales of *Harry Potter* could be taken as a landmark; any book which has sold similar amounts could be classified as outstanding sales. From my point of view, the *Einstein Phop Phraputthachao Hen* phenomenon is intriguing in two respects, initially, the book is the first popular science-related book that sold exceptionally. It is important to note that the majority of science-related books in Thai language are published as supplements to science textbooks. They are classified by the field e.g. biology, maths, and physics. The science-related books which were written for the public or 'popular book' in the Western sense were rare. Consequently, popular science does not exist as a book category in any Thai bookstore. From 2008-2010, science related genre was never listed in the top five bestsellers book category. The top five bestsellers genres in 2008 were novels, children books, textbooks, computer, and general knowledge, respectively.[6] In 2009 and 2010, the bestselling genres were similar to that of 2008, but the Dhamma, how-to and self-development genres became popular.[7] The state of science-related books is discussed further in Chapter 2. The *Einstein Phop Phraputthachao Hen* was often classified under 'Dhamma [Buddhism]' in bookstores, although some bookstores placed it in the bestseller section.

Secondly, it is only on occasion that books provoke discussion in Thailand. The *Einstein Phop Phraputthachao Hen* is the first book that attracted great attention from

[5] Bunditkul, O., 'The Story of Harry Potter', *Manageronline magazine*. August 2001. Available at: http://info.gotomanager.com/news/details.aspx?id=1757, Accessed 21 Mar. 2015.
[6] Pornchai Jantasok, 'Lifestyle: Read & Write', *Krungthepturakij*, 16 February 2009, http://www.bangkokbiznews.com/home/detail/life-style/read-write/20090216/html, accessed 1 September 2013.
[7]Chadchawan Panyapayatjati, 'Lifestyle: Read & Write', *Krungthepturakij* 1 February 2010. http://www.bangkokbiznews.com/home/detail/life-style/read-write/20100201/98019/ -2553.html, accessed 21 Mar. 2015.

the Thai media such as television programmes, newspapers, and websites, particularly on Pantip, an online forum.[8] The content of the book had stirred a significant number of posts via the discussion web board, a rare case for any book, this is elaborated in Chapter 4.

These two phenomenon represent particularly intriguing views of Thai towards science. The reports of falling gel-liked objects demonstrate the firm belief in superstition of some Thai people, although the incident could be explained by science. Moreover, as someone who is interested in the role of the Thai media I questioned whether the media, particularly newspapers, should have initiated investigating the phenomenon in depth rather than only reporting that the incidents occurred. The newspapers could have tried to answer more of 'why' rather than 'what' to the occurrences. By merely reporting what had happened, they caused panic in the society. Another point which noticeably reflects from the phenomenon is the Thai society's lack of organization to take responsibility of science-related crisis, since it took quite some time before the Ministry of Science and Technology held a press conference to offer the answer that the falling objects are cooling gel. For the latter case of the book sale phenomenon, it fascinated me, as Einstein is referred as one of the most well-known scientists in Thailand. One of his quotes, 'Jintanakan samkan kwa kwamru (Imagination is more important than knowledge)' is one that middle-class Thai are most familiar with.

[8] The author of the *Einstein Phop Phraputthachao Hen* was also on a few television programmes. For example, the Surivipa, one of the well-known talk programme, had interviewed the book's author twice. Surivipa is one of the renowned talk programmes; it broadcasted for six years which is a considerably long life for a Thai television programme. Programmes tended to be rotated year by year.

The quote was referred to repeatedly in Thai society, for example, in newspapers articles and popular books.[9]

Next I will provide some personal background to show why I am interested in the issue that has become my thesis topic. The media has always been of interest to me as my undergraduate and Master's degree were both in Communication Studies. I also worked in the media as a television programme producer and later on shifted my career to be a lecturer in Communication Studies. For this thesis, the examples presented earlier urged me to contemplate the science-Buddhism dialogue drawing on the media, i.e. popular books, newspapers, and websites. However, in Thailand science communication is not established in academia or on a professional level. At Naresuan University, where I attend, there is one science communication course offered at the Master's level. Although, the course's description concerns the communication of science to the public, the course was called 'Informatics science'.[10] The course was launched in 2009, however in 2013 when I began writing this thesis the course was closed down. From my point of view, the course's name reflects the academia's low level of awareness towards science communication. The Chulalongkorn University, is the oldest Thai university (founded in 1916) with a faculty of science since its foundation.[11] Only after long deliberations, despite being a pioneer of science education at university level, Chulalongkorn University has included science communication in its curriculum in

[9] An example is the *Krungthepturakij* newspaper which mentioned the quotation many times in their articles throughout the years. In addition, there is a popular book*, Jintanakan Samkan Kwa Kwamru: Ruam Wata Einstein* (Imagination is more important than knowledge: Einstein's Quotations) which presents Einstein's quotations.

[10] The information from Naresuan university website; http://www.nu.ac.th/tech-course.php accessed 10 January 2009

[11] The information from Chulalongkorn University website, http://www.sc.chula.ac.th/aboutUs.asp, accessed 10 January 2009

the last decade, but only as a Masters-level elective subject. On the professional side, there are only a few science journalists working for only one newspaper, the Manageronline. When the Thai government offered the funding for doctorate degree, I applied and obtained the scholarship. However, being that the climate in Thailand was not conducive for my present research, I decided to pursue my study in the United Kingdom where science communication has been flourishing in both academic and professional fields. The UK along with other countries e.g. Australia, and the US, launched science communication Master's courses in the late twentieth century. The science communication courses were established in many UK universities since the first course at the Imperial College launched in 1991. On the policy side, the British government and policy makers had many attempts to engage the public with science. The UK's developments of notions and concepts of the Public Understanding of Science (PUS), Science in Society, and 'science communication' are intriguing. The fruitfulness of academic research and the movements of science communication made the UK an outstanding country to conduct research for my PhD.

By focusing on the exceptional role of the science-Buddhism dialogue in science communication in Thai landscape, my thesis could claim its originality. Despite the originality, it is also a challenge to pursue my research on a topic and field with very limited recognition and research in Thailand. However, there were a few PhD studies regarding science communication in Thailand which were conducted by Thai students studying abroad. For example, *Knowledge Creation and Sustainable Development: A Collaborative Process between Thai Local Wisdom and Modern Science* (2005) by Yuwanuch Tinnaluk and *The Public Awareness of Science in Thailand: A Case Study on Biotechnology* (2005) by Apiya Hathayatham. Tinnaluk's thesis explores the role and

components of Thai local wisdom in dialogue with modern science. Her thesis argues that the interaction between Thai local knowledge and modern science had created new knowledge. She drew her argument on four case studies of Thai communities. Hathayatham's thesis focuses on biotechnology in a case study to obtain an overall picture of the interaction between the Thai public and science. She aims to create 'best practice' guidelines in order to communicate science effectively and productively to the public. Apart from these two PhD theses, another study which shares some similarity to my thesis as it also explores some popular books is *Kan Ti Kwam Satsana Duay Wittayasat (Interpretation and Explanation of Buddhism Through Scientific Framework: Case Studies)* by Pagorn Sinsuriya.[12] However, Sinsuriya selected some popular books 'consecutively focusing' on the contents of Buddhist texts, the core of Buddhism, and experiences from practicing Buddhist meditation. While my research also draws on these popular books, it is through the lens of the Science-Buddhism dialogue. In addition, Supara Komolpatara, a doctoral student also studying in the UK, examines how science communication training for science explainers can enhance museum visitors' awareness, understandings and cultural attitudes to science;[13] while Wilasinee Triyarat's thesis investigates the science caravan project which seeks to develop suitable framework for science activities in regional areas.[14]

[12] The research was funded by the Chulalongkorn University Centre for Buddhist Studies.

[13] Science Communication Group, University of the West of England. http://www1.uwe.ac.uk/research/sciencecommunicationunit/staffandstudents/suparakamolpattana.aspx, accessed 10 May 2013.

[14] Science Communication Group, University of the West of England. http://www1.uwe.ac.uk/research/sciencecommunicationunit/staffandstudents/wilasineetriyarat.aspx, accessed 10 May 2013.

As stated earlier, I base my analysis on a case study of *Einstein Phop Praputtachao Hen*. The case supports the science-Buddhism discussion and affords me an opportunity to explore a broader trend of the Science-Buddhism dialogue in popular books in Thai society. Moreover, my research aims to gain a better understanding of science communication in Thailand. In order to add a crucial perspective to my thesis framework, I consider the investigation of two main parties in the science communication, the government and the middle-class. The investigation of the government's science communication is eminent to my thesis because of two main reasons. First, the popular books, which my research surveys, are some of the government's prominent choices of media. The government used books to communicate science to the middle-class public, its target group. At least two books were published aiming directly at promoting 'popular science books' that were written by Thai authors. One of the government's main research funding organizations, the Thailand Research Fund (TRF), funded two studies regarding selecting and reviewing 'good popular science books' on the market. The studies were published as two popular books, *The Review of 88 Good Science Books* and *100 Good Science Books*.[15] I will examine the government's popular science book recommendations. Second, my initial exploration shows that there are different concerns regarding science communication between the Thai government and the Thai public. The middle-class Thai public are interested in science-Buddhism, however, the government has a focus at an economic agenda of science. However, it is not the specific case to Thailand, as governments in most countries also tend to focus on the economic benefits of science. This mismatch of

[15] C. Khuppratakul, et al., 2002, *The Review of 88 Good Science Books*, Double Nine Publishing, Bangkok. C. Khuppratakul, et al., 2008, *100 Good Science Books,* Sarakadee, Bangkok.

focuses between the Thai public and government is central to my thesis. I aim to answer vital questions such as what other practices that the government had done regarding the science Buddhism dialogue? Does the government take a role in the promotion of Einstein? By outlining my research to focus on both these sides, the Thai public and the government, my thesis will show a broad perspective. From my point of view, it is necessary to reflect both sides because it would demonstrate the challenges of science communication in Thailand. By addressing the challenges, I hope to offer some suggestions for more effective science communication.

It can be understood that the government made the assumption, through its publications and research, that the Thai public lacked interest in science. By contrast, I intend to suggest that the Thai public is attentive to science but their interest differs from the government. The disparity between both parties has created tension in science communication. My thesis takes the disparity as an opportunity to argue against some government's claims and propose some suggestions which could possibly lead to some achievement in engaging the public with science.

The government funded some studies regarding science education, science literacy and the review of science development in Thailand. However, there is no academic scholarship to shed more light on the issue or reflect different perspectives, because the science communication field does not exist as an academic field in Thailand as previously mentioned. The view on the issue is very much restricted and could be considered imbalanced because it only reflects the government's side. From the government's point of view, science in Thailand has not yet reached its full economic

potential due to a significant lack of public support and understanding.[16] In particular, the Thai public is seen as being 'cold' toward the development of science and technology.[17] There are so far only a handful of studies attempting to suggest solutions for what the government perceives to be the main obstacles in increasing the Thai public's interest in and awareness of science. For instance, Soraj Hongladarom comments that the way science education is pursued in Thailand is a major part of the government's problem.[18] He suggests that science needs to be blended with Thai culture in order to create a distinctive 'science culture in Thai society'.[19] However, Soraj did not elaborate on the suggestion. Tanapol Wirasa and Kittiwat Uchuphalanan argue that there are several reasons for the public's coldness toward science. First, Thai science and technology organizations were established by leading scientists without ever including the public and private sectors in their operations. Moreover, the public and private sectors are not involved in setting the objectives, assessments and funding of scientific organizations.[20] Even though these studies and the NSTI aim to investigate reasons for the lack of interest in science and identify ways to engage more efficiently with the public, they seem to overlook a number of areas that the Thai public is strongly interested in which could be cultivated for an effective creation of science awareness. My thesis explores these gaps in previous findings by applying empirical research with the aim to gaining a more comprehensive understanding of the Thai public's interests in

[16] The National Science and Technology Strategic Plan : (2004-2013)
[17] T. Wirasa and K. Uchuphalanan, 'Policy and Institutes of science and Technology in Thailand', in *The Thai Science and Technology: from the past to the present*, Yongyut Yuttawong (edit.) The National Science and Technology Development Agency (NSTDA), 2000, p. 340.
[18] Soraj Hongladarom (1998) *The Crisis of Science Education in Thailand,* Bangkok: Bangkok, The National Science and technology development agency.
[19] Soraj Hongladarom, (2002), *Science in Thai culture and society*, (Bangkok: The Institute of Academic Development). pp. 212-215
[20] Wirasa and Uchuphalanan, pp.340-344

science. Based on my findings I will argue that the government needs to acknowledge the public's interest in science-Buddhism dialogue if it wants to develop effective approaches to raise science awareness among the public.

My thesis will investigate two main questions:

• What are the characteristics and challenges of science communication in Thailand as manifested in the Einstein phenomenon?

• What is the focus of the government's science policies and practices?

My research focuses on the middle- and upper-middle classes in Bangkok, and there are several reasons for this focus. First, the middle- and upper-middle classes are the government's primary target groups for raising science awareness. Here the hope is that an increasing number of middle and upper-class children can be encouraged to take up a career in science. Secondly, this thesis has to be manageable within a PhD period of study, so the research is concentrating on the small but significant targeted group, the first priority group in the government's view. Thus, studies of public engagement with science on a broader scale e.g. focusing on the Thai population living in the countryside area, is very intriguing but need to be postponed for further research.

My thesis explores three main themes. The first theme is the popularity of science-Buddhism dialogue among the Thai middle class. The Thai public's interest in science-Buddhism dialogue is the kind of science which is labelled 'contemplative science' by Allan Wallace.[21] It is the science which is quite unlike economic science. My argument draws on the quantity and content of popular books with science-Buddhism

[21] B. Alan Wallace, 2007. *Contemplative Science*: *Where Buddhism and Neuroscience Converge*. Columbia University Press.

as the main source; I also refer to newspapers and websites to support my argument. Moreover, I argue that science-Buddhism plays a prominent role in science communication in Thailand.

The second theme argues that Einstein is arguably the most well-known scientist in Thailand as a result of three main reasons. First, he was one of the earliest Western scientists introduced in Thai popular books. Second, he was promoted as a scientific icon by the American media which highly influenced Thai media; the surge of the books on Einstein in the Thai market in 2005 are evidence that strongly support my argument. The third and most significant account for Einstein's popularity among the Thai middle-class is the Thai media's indigenization of him, particularly through popular books published between the last decade of the twentieth century and the first decade of the twentieth-first century. The portrayal of indigenized Einstein is a vital theme in the science-Buddhism dialogue, arguing on the compatibility between science/ Einstein and Buddhism leads to conclusion that Buddhism is superior to science as science has been catching up with Buddhism. The term 'indigenization' is defined by *Oxford English Dictionary* as 'the act or process of rendering indigenous or making predominantly native; adaptation or subjection to the influence or dominance of the indigenous inhabitants of a country.' It defines the meaning of 'indigenize' as 'to bring something under the control, dominance, or influence of indigenous or local people'. My own interpretation of indigenization is the activity of bringing, connecting, adapting, reinterpreting/ familiarizing the account of other cultured entities (in this case, Einstein and his theories in particular) to influence of the local population (i.e., the middle-class Thai).

The third theme of my thesis is the investigation of the government's aims and practices of communicating science. I will investigate its practices in print, museums, and television programs. My investigation focuses on the government's practices relating to science-Buddhism dialogue and Einstein stories. In other words, I concentrate on assessing how much (if any) the Thai government has addressed and accommodated Einstein-related stories and the science-Buddhism dialogue in their practice of communicating science. Therefore, a comparison analysis will show the differences and similarities between the government's objectives and practices and the public's practice. I expect that the outcome will shed the light on the challenges of science communication in Thailand.

Methodology

In order to answer my research questions, my thesis obtains the data needed through the use of several research methodologies. My argument regarding the significant role of the science-Buddhism dialogue in science communication draws on the statistical content analysis of popular books, newspapers, and certain websites. For the popular books, I concentrate on the late twentieth to early twentieth-first century because of two main reasons. My research of popular books concentrates on those from the late twentieth to early twenty-first century, as is the period that such popular books on the science-Buddhism flourished. In addition, it was the period that *Einstein Phop Praputthachao Hen* was published which, as noted, is the main case study of my research. However, I analyse other popular books on the similar theme, which were published in mid twentieth century, to show a broader picture. However, only some of the books that focus on science-Buddhism dialogue and Einstein theme will be given an in-depth analysis.

A major challenge in researching print media in Thailand is obtaining the acquired copies. The Thailand national library is a place that one would expect would hold most, if not all, copies of books published in Thailand. However, that is not the case in Thailand. Therefore, I needed to look elsewhere to make sure. The best available libraries are university libraries. I selected three main universities' libraries: Chulalongkorn University, Thammasat University, and Mahidol University. I used the Thai National Library as well. The catalogues of these libraries' have full Internet access from the UK and their Internet servers are reliable. I mainly used their online catalogues and paid visits to the Thai National Library and the Chulalongkorn university library a few times on my field research trips to Thailand. The National Library's online catalogue was largely improved from the 2009 when I started my research. My search process is discussed further in later chapters.

I started by looking at the literature listed in *Review of 88 Good Science Books*.[22] I found that researchers faced the same problem of getting hold of books, therefore they used many sources such as universities catalogues, publishing houses, private collections, and new and second handed bookstores in order to make sure that they cover every science book published.[23] However, my resources are not equal to them.

By using these three catalogues, my aim was to obtain reliable statistics from popular books on the science- Buddhism dialogue and Einstein books. Other good sources for popular books on Einstein were found in new and second-hand online bookstores websites and web blogs. I found that the libraries that I have mentioned did not hold the complete collection of these books; they have only a few of them. Some of

[22] Chaiwat Khuppratrakul and the collaborator (2002)
[23] Kruppratakul et al., pp. 38-39

these Einstein books were published and subsidised by an American agency, the United States Information Service (USIS), which were no longer available. However, it is surprising that the Information Resource Centre of the American Embassy does not hold any information or copy of these books in its libraries around Thailand.[24] By combining the information from a few websites in order to cross check the data, my hope was to list a relatively complete series of popular book on science-Buddhism.

Newspapers were systematically selected to represent the main target of my thesis, the middle class. The first of these newspapers is *Thairath*, which has the highest circulation figures in Thailand; the second is *Matichon*, which is representative of a 'quality newspaper'; and thirdly and finally is *Krungthepthurakit*, which is aimed at the business market. These are newspapers that the Thai middle-class tend to read; although *Thairath* is the newspaper that is read by almost every social group. It is beyond the scope of this project to undertake a comprehensive study of Thai newspapers and, as with any project, there are limitations regarding the availability of source material. Nexis, which is provided by the University of Leeds Library and is one of my main sources, only offers one Thai-based newspaper archive, *The Nation*. In the UK, the largest Thai newspaper archive is in the National Library but it only offers newspapers in hardcopy and not in digitized form. These newspapers are kept without classification whether in digitized or non-digitized form. Therefore, it is extremely difficult and time-consuming to manual search them. The majority of Thai newspapers being un-digitised is a common problem.

[24] I contacted the staff at the Information Resource Centre asking about the book series, Seriphap. The staff said the centre does not have any detail on the Seriphap books series but they have the complete collection of Seriphap newspapers.

One exception is the *Matichon* archive, a private archive that sells news clippings. It offers a wide range of newspapers and allows paid members to search the data online. However, the period covered by the *Matichon* archive is limited and only dates back to 1997. Nonetheless, it is the most promising and accessible Thai newspaper archive and it is partially for these properties that I have limited the period of study in this chapter to a period of fifteen years between 1997 and 2011. Although the available period is not perfectly suited for an extensive study, it is sufficient enough for my thesis's framework which investigates phenomenon in the late of the twentieth to the early of the twentieth-first century. In spite of these chronological constraints, I hope that this study will encourage others to see the value of Thai newspapers as an archival resource and hence will lead to an extension of the period of examination in future research. In addition, websites, particularly Pantip, are another source of my research because they are mainly used by the Thai middle class.[25]

I provide the statistical evidence to show the publishing trend decade by decade. By doing was able to see the trend of publishing which guides my further analysis of the contexts in the period that these books were published. I was able to gather information of the high quantity of science-Buddhism books publishing or Einstein books publishing in particular decade. Furthermore, I conduct a content analysis to demonstrate these books' themes, and the authors' characteristics. In addition, a comparison analysis was conducted to explore the similarities and differences (if there are any) between these

[25] The statistic from the Electronic Transaction Development Agency (ETDA) reveals that in 2012 more than 87.9 per cent of the Internet users in Thailand are graduates. Also 49.7 per cent of them work for the government.(The Thailand Internet User Profile 2013, the Electronic Transaction Development Agency (ETDA) , June 2013)
http://meeting.etda.or.th/internetuserprofile2013/TH_InternetUserProfile2013.pdf, accessed 19 Oct 2013

books. The selected newspapers are also examined for their coverage on science-Buddhism. The quantity and themes, discussed herein, are compared from coverage gathered from selected newspapers with the information from the books, referred to earlier.

I began my catalogue search by using the term 'Phuttasatsana kap wittayasat (science and Buddhism)'. The Chulalongkorn University library provided around a hundred books listed under the subject. The National library result yielded ninety books under the subject. Mahidol University library revealed nearly two hundred books. This number is so high because the list includes every form of media e.g. sound recordings. In addition, the catalogue counted each edition of the same book as separate items; for example Mahidol University library counted the *Einstein Phop Phraputtacha Hen* four items due to its many editions. The lists from the three catalogues were crossed check to get rid of duplicate titles and some books whose focus was not on science-Buddhism dialogue. I ended up with a list of around sixty books. I scanned the listed books when I visited the actual libraries to make sure their focus was indeed on my research theme. I bought some relevant books on my theme and brought them back to the UK. However, some books were not available in bookstores, therefore I had spent substantial time to read them in the library, took notes and photocopied what necessary from the libraries.

For my other main theme of presenting the remarkably high profile of Einstein in Thailand I began examining the books on Einstein published in Thailand. The statistics gathered from these books are compared with the total number of books on scientists that were published in Thailand in order to demonstrate the high popularity of Einstein. I then compare my list of science-Buddhism dialogue books and Einstein books with the

government's lists, *The Review of 88 Good Science Books* and *100 Good Science Books* to show the similarities and difference of listed books. I analyse the characteristics of science-Buddhism dialogue books listed by the government and compare them with the characteristics of the popular books of interest to the public. Another major challenge of conducting a comparison analysis is that some of the book circulations are not always available. Without the circulation figures of the books, it is quite difficult to assess the books popularity. However, I try to observe the figures when possible.

A similar analysis is applied to the selected newspapers as well. The coverage of Einstein is compared to the overall coverage of science, and the other international scientists e.g. Darwin, Newton, and Hawking. It is noted that the coverage of these three scientists is moderate although at a different level compared to Einstein. Extensive search of the Einstein story on Thai websites is conducted. I aim to establish the quantitative data arguing that Einstein's coverage in Thai print media is outstanding compared to other scientists' coverage. In addition, a comparison analysis between the quantity of Einstein's stories and science content in the selected newspaper is also produced. This practice demonstrates that although the figure of Einstein's articles in Thai newspapers is relatively low compared to the British newspapers, comparing the Einstein coverage with science coverage in general determines that the figure is high and worthy of further study. Moreover, websites were investigated by using the Google website as a preliminary search engine to demonstrate the general figure of website that talks about science-Buddhism dialogue and about the book, *Einstein Phop Phraputtachao Hen.* I have focused my search particularly on Pantip, one of the most popular discussion boards. Later on, I report on my research on Pantip's own search engine to explore its old threads regarding the book.

Through quantitative data I confirm Einstein's high profile and examine the content of science-Buddhism popular books, focusing on Einstein related content. My argument is that, unlike other known scientists, Einstein has become the most popular scientist in Thailand because he was portrayed as engaging with the Buddha or Buddhism. Such portrayal is referred to in this thesis as 'indigenization'. I argue that the depiction of Einstein is rather selective in the process of indigenization as part of his biography mentioned internationally was dismissed in Thailand. Another vital attempt to indigenize Einstein through his appearance in these science-Buddhism books and newspapers is to argue that, according to one of his quotes, Einstein admired the Buddha and Buddhism. However, as I have mentioned the reference of the quote is unknown. These attempts to indigenize Einstein are quoted and discussed later on in Chapter 5.

Other valuable sources for my thesis are in-depth interviews. I conducted interviews, regarding the three main themes of my thesis, on my field trips to Thailand. The first theme is the overview of science communication in Thailand since there are limited scholarships on the issue, hence I have selected to interviewed the key informants in the science communication.The second theme of my interviews, on the government's practice on science, was conducted with the vice presidents from the NSTDA and the NSM, key informants from the government organizations taking main responsibility for science communication practice. Interviews on the third theme, on science communication practices, were done with some authors of science-Buddhism books, popular science book publishers' editors, some newspapers' science editors from the private sector. The list of key informants is found in Table 1.1 List of the Key Interviewees.

Table 1.1 List of the Key Interviewees.

Name of interviewees	Status
Kumchad Mongkonkul (PhD.)	A lecturer in the Faculty of Science, Chulalongkorn University. Kumchad was awarded the title of the outstanding scientist; he also took part in establishing the Science Society of Thailand.
Bumroong Trimontri	An active member of the Science Writers' and Publishers' Forum & Society of Thailand. Bumroong was a co-author of the book on the strategies to raise science awareness in Thailand with Kumchad.[26]
Jumpol Hemakirin	The first and current manager of the Thai Science Media Centre. He was an editor in a few science magazines
Buncha Thanaboonsombut	A scientist who works for the National Science and Technology Development Agency (NSTDA), the government's science agency. He wrote a few popular science books and writes science columns in *Krungthepturakij* newspaper. His articles and actions will be extensively discussed in Chapter 5 and 6.
Numchai Chewawiwat	A biologist who works for the NSTDA. He also writes popular science books and science columns.
Chaiwat Kubpratrakul	A retired physicist who wrote a number of popular science books; he is the head of researchers in the books recommendation projects.
Rawee Pawilai	A retired scientist interested in the relationship between science and Buddhism. He wrote a science-Buddhism book.[27]
Soraj Hongladarom	A university lecturer who wrote Science in Thai Society.[28]
Aomjai Trimek (PhD)	A Vice President taking responsibility for 'science and technology for society' at the NSTDA
Sukanda Worapanpong	A lecturer on print media at the Sukhothai Thammatirat University
Suwat Assawachaichan	Sarakadee Publishing's Editor-in-Chief.
Siripong Wittayawirot	Matichon Books Editor-in-Chief
Manop Issaree	NSM vice president
Sasitorn Tesassapark,	NSTDA publisher and bookstore manager
Tawonkan Mungpanklang	Editor of the book, Einstein Phop Phraputtachao Hen

[26] K. Mongkonkul and B. Trimontri. 2006, *Kan Sang Kwam Tranak Dan Wittayasat Lae Teknoloyi Nai Sangkom Thai [Raising Science and Technology Awareness in Thailand: the National Strategies].* The National Science and Technology Development Agency: Bangkok.

[27] Rawee Pawilai. 2000. *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (The comparison of Science and Buddhism).* Bangkok, Buddhadhamma Foundation.

[28] S. Hongladarom. 2002. *Science in Thai Society.* Chulalongkorn University press, Bangkok.

Somsakul Paojindamuk,	Science editor: Krungthepthurakit
Tippawan Khongpraphan,.	Senior science journalist: ManagerOnline

From the UK, I contacted my key informants by e-mails and phone. I arranged the details of the interviews with them in advance of my field trips to Thailand. I also used a snowball technique to interview other interviewees who were recommended by my key informants. I interviewed most of my key informants in face-to-face communications. However, due to some of their conveniences and preferences, I had interviewed them on the phone. For face-to-face interviews, I took notes and recorded the interviews; these records were transcribed later. I applied the same practices to the phone interviews, although the quality of recording was not so good. Therefore, I transcribed and typed the details as soon as the interviews conclude while my memory was still fresh.

As previously discussed, I position my thesis to investigate the differences between the public's interest in science and the Thai government's aim of using science. I aim to demonstrate that the public's interest is 'contemplate science' while the government aims are for using science to improve the economy. I argue that the 'contemplative science' is the main theme of science-Buddhism. It plays an important role in science communication in Thailand where Einstein was employed to be the representation of science in the discourse. Einstein was indigenized by some Thai authors and newspapers columnists. The practice was also spread on the Internet. I argue that the media's indigenization of Einstein had made him extraordinary well-known in Thailand. To balance my thesis position and reflect another angle, I investigate the government's science communication policies, mainly its NESD and STI plans, and

practices to see if the government had any concern on the science-Buddhism theme. Certain findings confirm my concern that the government and the public have different interests in government's policies.

In order to assess the implementation of these two agencies, information from the museums visitors is needed. However, there is very limited published research on the NSM's visitors. To obtain more information on this matter, I conducted a quantitative research approach as it is the most appropriate method since qualitative methods such as in-depth interviews were not suitable or practicable to collect mass information. The survey I implemented yields demographic data on the NSM's visitors, their purposes of visiting the NSM, their satisfaction with the exhibitions, their attitudes towards science and their science consumption behaviour. I discuss my survey findings and carry out comparative discussion with other available survey results to shed more light on the implementation of the NSM in Chapter 6.

The NSM is the main governmental department taking responsibility for 'enhancing public understanding of science and technology which is the vital component in developing the country'.[29] While the NSTDA's priority task is fostering research, enhancing the public awareness of science was also among its tasks. These two governmental agencies were established in the same decade, the 1990s. The NSTDA was established in 1992; while the Thai National Science Museum (NSM) plan was approved by the government in 1991 and officially opened to the public in 2000. I examine the strategy of these two agencies' to implement such practices, which mainly concerned visual media. In-depth interviews with the agencies deputy directors were conducted

[29] This is the mission of the Thai National Science Museum stated in its annual reports. See, for example, the annual reports of 2007, 2008 and 2009.

in order to obtain information unavailable in published documents and websites. I present a comparative analysis between these agencies' practices and some other similar agencies in foreign countries. This sheds light on possibilities for future engagement with the public on the subject of science communication.

The survey was conducted inside the NSM, with a sample of 184 participants. I distributed 220 questionnaires, of which 200 were returned. Only 184 questionnaires were completed and could be analysed using SPSS programme. The questionnaires were distributed over a period of two weeks, covering weekdays and weekends to make sure that my sampling groups were randomly selective. I approached almost every visitor who seemed to be at the correct age. They had very limited time therefore I needed to work very fast. I positioned myself on the ground floor at the centre of the museum where the entrance, exit, and the waiting area were, where every visitor would pass.

The procedure of distributions are: I approached any visitor by briefly introducing myself; later on, I asked the visitors' ages to make sure that they were eligible to fill in my questionnaires. According to the University of Leeds's ethical regulation, the eligible survey participants must be over sixteen years old, unless they were with parents or guardians. Consequently, according to the museum's data, the majority of the Thai science museum visitors are under sixteen years old. I am aware that in being unable to interview the majority group of the museum visitors may affect the use of the data that I obtained from the survey. However, I view my survey as a small step to understanding the museum visitors' behaviour, their purpose of visiting is of particular of interest to my thesis since it will help in understanding the visitors' behaviour. In conclusion, I offer the following descriptions of each of chapter.

Chapter 2: **Analysing the Landscape of Science Communication in Thailand: History and Contemporary Analysis**. This chapter aims to demonstrate the historiography of the science development and the adaptation of Buddhism in Thai landscape. These two entities' developments are complex, they involve both complimenting and competing development. This chapter provides an overview landscape of science communication for the subsequent core chapters, it investigates the current science policies and organizations and the overview of science communication outlets (e.g. print media and visual media).

Chapter 3: The Significant Role of the Science-Buddhism Dialogue in Thailand. This chapter focuses on the science-Buddhism dialogue in Thailand drawing on popular books, newspapers and the Pantip online forum. It considers the significant role of science-Buddhism dialogue in the contemporary Thai society beginning with how the science-Buddhism dialogue started in Thailand. The chapter will demonstrate my argument that the science-Buddhism dialogue is of interest to some middle class Thai. I present the statistics on the books on science-Buddhism dialogue and offer some comparison analysis.

Chapter 4: The Prominence of Einstein in Thai society. An examination of the extraordinary profile of Einstein in Thailand is presented in this chapter; its focal point is the relatively great number of popular books, newspaper articles and Pantip's threads on Einstein. Its main aim is to show Einstein's coverage in the media compared with other international scientists: Newton, Darwin, and Hawking in order to determine the nature of Einstein's prominent role in Thailand. This chapter will contextualize the popular books on Einstein to further understand the discourse.

Chapter 5: The Indigenization of Einstein. For this chapter, I argue that although Einstein is internationally popular which to certain point has effected on his popularity in Thailand, however, I contend that his popularity in Thailand was affected by his connection to Buddhism. This chapter focuses on the indigenization of Einstein drawing on print media, and Pantip. This chapter investigates the process of Einstein's indigenization in aforementioned media.

Chapter 6: **A contrast between the Approaches and Practices of the Government's Science Communication and the Middle Class.** This chapter details the argument that the government has overlooked the public's interest and it may cause the failure of its attempts to engage the public with science. This chapter also presents an investigation of the government's two main organizations which are taking responsibility of engaging the public with science, the NSM and the NSTDA.

Chapter 7: Conclusion

Chapter 2

Analysing landscape of science communication in Thailand: Historical and contemporary

This chapter analyses the landscape of science communication in Thailand, establishing historical and contemporary background for the chapters to follow. I discuss, herein, the two integral players in science communication: the government (in this case this means the organizations taking responsibility for science and science communication); and the middle-class Thai public who is more likely to be concerned for science, and is the government's main target in science communication. These two parties' disparities of focus in and concern for science, has created inevitable tension, which is the central investigation of my thesis. This thesis finds a better understanding of Thai science communication through the examination of such disparity.

The chapter is split into three main sections. First, the history of science development in Thailand is explored; second, I give an overview of the contemporary position of science in Thailand; third, an overview of science communication outlets in Thailand is provided. The brief overview of the historical development of science shows the changing role of the elites in science, from the monarchs to the government because of the shift from the absolute monarchy to the constitutional monarchy in 1932. It also demonstrates that Buddhism has taken strong part in the development of science in Thailand. The overview of the contemporary position of science in Thailand illustrates the current science plan and policy, and also reflects on the government's perspective on science. The third section offers an overview of the media outlets in Thailand which

are mainly undertaken by the private sector who has their own objective of making profits. Hence they are likely to accommodate the public's interest.

2.1 The historical analysis of science development in Siam/ Thailand.

Although my thesis examines the contemporary science and science communication in Thailand, in order to understand the integral characteristics of contemporary science communication and to demonstrate the development of science, it is important to reflect the historical perspective of the origin of science in the kingdom. This section focuses on two main themes, first, the significant role of Buddhism in encountering the West. The second, the vital role of the Thai elites, particularly King Mongkut (1851-1868) and his minister, Thippakorawong in dealing with the Euro-American influence in late nineteenth century.

2.1.1 The significant role of Buddhism in the science development in Thailand

Buddhism plays an important role in the Thai way of life. Nowadays, around 95 percent of the Thai population are Buddhist. As a Thai studies historian concludes, for some people to be Thai is to be Buddhist.[30] Moreover, Buddhism proved to be a crucial feature in determining the confrontation of Siamese elites with Western science, this being connected with Christianity during the period of colonialism in the nineteenth century. Scholarship on the role of Buddhism on Thai politics, culture, arts, social practices etc. is rich, from a historical perspective, particularly by international scholars on Thai studies. However, the literature on the role of Buddhism in science development in contemporary Thailand is rather rare.

---

[30] J. A. Peter, 2003, 'Thai Buddhist identity: debates on the *Traiphum*', in Reynold, C. (ed.), *National Identity and its Defenders: Thailand Today.* Chiang Mai, Thailand, Silkworm, pp.155-188.

Siam's entry into the modern age arguably began during the reign of King Mongkut or Rama the Fourth (1851-1868). It was the beginning of the 'New Siam' era, in which Siam changed dramatically, the West arguably was a strong external factor which forced and shaped the shift. One component of the shift that I am focusing on here is its effect on Buddhism. Buddhism was majorly rationalized in this period. King Mongkut and his noblemen were the most active parties in the discourse of rationalized Buddhism. King Mongkut's reforms had the most impact on Buddhist traditions and Buddhist texts; he initiated a new Nikaya (order) Thummayut, and reinterpreted the *Tipitaka* and the *Traiphum*, which was the core of the orthodox Theravada Buddhism.[31] Prior to the mid eighteenth century, a Buddhist cosmography, *Traiphum*, laid the foundation for the Siamese system of belief. It was believed to be one of the most important Buddhist texts in pre-modern Thailand.[32] It served as an all-embracing view of the world as seen through Siamese Buddhists' eyes, as well as a primary instrument for educating subjects of the Siamese kings in Buddhist values from the fourteenth century of Sukhothai to the early nineteenth century of Bangkok.[33] *Traiphum* was read

[31] *Traiphum* divides beings into three worlds: the world of sensual desire, which was divided into eleven realms; the world with only a remnant of material factor, divided into sixteen realms; and the world without material factors, divided into four realms. *Traiphum* asserts a few main concepts such as those of birth and rebirth, karma, and heavens and hells. The author classifies birth into four modes; also twenty kinds of rebirth linkages. The births and rebirths of beings are according to the moral quality of deeds performed, called karma. Each realm among the thirty-one realms in which beings are born into provides a different quality of life; in some realms, such as the various hells, the realm of suffering ghost, and various heavens. The punishments for the beings that have done evil deeds are described in detail as well as the causes of their death. *Traiphum* proposes the view that the cycles of rebirth and dying are impermanent until one reaches nirvana; beings' rebirths can be in different realms and if they have done meritorious acts they may be reborn in higher realms. *Traiphum* also provides a chapter giving a description of the geography; it describes Mount Sumeru as the centre of the earth, and the surrounding seas, and continents which form the Chakkawan (cosmos). *Traiphum* states that the Earth is as flat as a lotus leaf with hedging, Mount Sumeru acting as the Earth's axis surrounded by water and forests. The Sun and the Moon revolve around Mount Sumeru. The Earth can be divided into four continents; each group of humans living in each continent is very different in appearance.

[32] P A. Jackson, p. 156.

[33] Craig J. Reynolds, Buddhist Cosmography in Thai Intellectual History, chapter 8, *Seditious Histories: Contesting Thai and Southeast Asian Pasts*, University of Washington Press, 2006, p.161

as an account of the structure of the cosmos; it acted as the elementary base of the Siamese view of nature. *Traiphum* explains the natural phenomena: planetary movements, weather, and, biological processes.[34] However, as colonialism went hand in hand with the American missionaries' attempts to convert Siamese Buddhists to Christians. In order to demonstrate its superior traditions to the West, xSiam Buddhist elites had criticised its own tradition, *Traiphum*– although only at certain part of its content.

The encounter between the Siamese system of belief and Christianity began with a challenge by some Westerners; the challenge drew Siamese to 'demythologize' their own traditions. King Mongkut's reforms, had a profound influence on Buddhist traditions and Buddhist texts. Mongkut initiated a new Nikaya (order) Thummayut, and reinterpreted *Tipitaka* and *Triphum*, which was the core of the orthodox Theravada Buddhism. His background could have played a significant role in the reformation, as he was knowledgeable in both Buddhism and Western culture. He was ordained as a Buddhist monk for twenty-seven years before he ascended the throne allowing him to become one of the most outstanding Buddhist scholars in the kingdom. Moreover, Mongkut was tutored in English by westerners, for instance by Jesse Caswell, an American missionary. His English skill must have been remarkable as Alabaster commented that 'his powers as a linguist were considerable and enabled him to use an English library with facility.'[35] Moreover, King Mongkut had a reputation among the European community for being 'sympathetic to Western culture'.[36] Mongkut was very

---

[34] Craig J. Reynolds. 'Buddhist Cosmography in Thai History, with SpecialReference to Nineteenth-Century Culture Change'. *The Journal of Asian Studies*, 1976 Vol. 35, No. 2, p. 207.

[35] Henry Alabaster. *The Modern Buddhist: Being the Views of a Siamese Minister of State on His Own and other Religions.* London: Trubner&Co. 1870. p. 3.

[36] Ian Hodges. 'Western Science in Siam; A Tale of Two Kings' *Osiris, 2nd series*, 1998. Vol. 13, p. 92.

keen on astronomy, especially the calculations of the planetary movements, since the early years of his monkhood.[37] Mongkut's collection of Western astronomical books and telescopes is evidence of his deep interest in astronomy. Mongkut's personal interest in western knowledge, his progressive elite education with, no doubt, the context of colonialism, led to a process of a Thai-initiated partial westernization in his reign.

There were several major issues that Mongkut reinterpreted through his reforms. First, he diminished the importance of nibbana (incarnation, which was the ultimate aim for the Buddhists) in the Buddhist texts. Instead, Mongkut focused on the worldly experience rather than the future life and he reinterpreted the Buddhism cosmography based on empirical evidence. Another core teaching in *Traiphum* is heaven and hell, which Mongkut criticised. Although he did not deny the existence of heavens and hells, he questioned the explanation of heavens and hells as locations. He interpreted that 'heaven is in one's breast, hell is in one's mind.'[38] This notion was later echoed by some other scholars and monks, including Buddhadasa (1906-1993). More importantly, the discourse of interpreting traditional concepts such as heavens, hells, and karma in the rationalisation of Buddhism in the mid-nineteenth century, continues to the present day.

Despite, his notable reformation of Buddhist orthodox tradition reflecting his progressive vision to a certain extent, Mongkut arguably practiced traditional rituals such as promoting Brahmanic court rituals, and was a compiler of new protective 'magical chants'.[39] Another scholar adds that Mongkut relied on court astrologers and

---

[37] I. Hodge, p. 92.

[38] Visalo, P., (2003). *Phuttasatsana Thai nai Anakod [The future of Thai Buddhism].* Bangkok: Sodsri-Saridwongsa Foundation. pp. 9-11

[39] Ibid

he practiced popular and superstitious Thai religion, including inviting good spirits to expel evil spirits, and he also believed in some other supernatural phenomenon.[40]

The challenge of the concept described in the *Traiphum* explicitly took place in the first newspaper published in Siam, *The Bangkok Recorder* by Dr Dan Beach Bradley, one of the most significant missionaries who lived in Siam and a tutor to the royal household. Bradley brought the printing press with him to Thailand from the US and introduced printing to Siamese in 1835. The first volume of *The Bangkok Recorder* was published in 1844 but it lasted only a year.[41] *The Bangkok Recorder* was printed in the Thai language and Thai script and contained only four pages. The prospectuses printed in the first volume were to report news from many countries such as Singapore, China, Burma, India, England, France, America etc. Moreover, it reported the import/export goods pricelists, and included texts for learners of English language and articles on western medical knowledge. The first volume contains two articles regarding lightning and ointment making. The other contents are news from other countries and goods pricelists. Using an astronomical metaphor, Bradley stated that *The Bangkok Recorder* would be a telescope for the Siamese to see the world.[42] However, the newspaper became more of an arena for an encounter between the old world and the new world in Siam.

Bradley, acting as the editor, tried to point out that modern knowledge was a part of Christianity, and that European nations were modern and civilized because they believed in Christianity and Christian values. Hence Siam could not be modern or

---

[40] P C Johnson, 1997, 'Rationality in the biography of a Buddhist King: Mongkut, King of Siam (1851-1868)', pp.232-255

[41] The main cause was the death of Bradley's wife, which led him to decide to go back to America. Moreover, the closure could also have been because of the low subscriptions.

[42] D Pueksom, p. 260.

civilized unless it too became Christian. Bradley's claim rested on three main points underpinning western knowledge: first, the source of modern knowledge was Christianity; secondly, the root of darkness and barbarism in Siam was Buddhism; finally, it was modern knowledge with Christianity as its foundation that had enabled western countries to become liberal and powerful.[43] A member of the Siamese elite wrote anonymously to *The Bangkok Recorder* to argue against Bradley, saying that there were many countries in Europe that were not Christian but were nevertheless civilized. Furthermore, he questioned why Chinese and Mongols who had become Christians had not developed western-like civilization.[44] This anonymous writer may have been Thippakornrawong, the Minister of Foreign Affairs, as he mentioned this episode in a book he later wrote.[45] Henry Alabaster, an Englishman who was a vice-consul in Mongkut's reign, complemented Thippakornrawong as 'a thoughtful Siamese Buddhist' and added that 'he was always open to argument'.[46] These debates carried on over a period of a year (1865-1866), covering many topics, such as western and eastern religions, conservatism and modernism.

The demythologisation of the Buddhist tradition continued after *The Bangkok Recorder* came to an end. When Thippakornrawong wrote his treatise *Kitchanukit* in 1867 and in his preface he states that 'my book will be one of questions and answers, and I shall call it 'a book explaining many things'.'[47] Further, he noted that he was dissatisfied with the Thai textbooks then being used, criticizing them as useless.[48] The

[43] Saichon Wannarat cited in Davidsak, 1998 p.261
[44] D Davidsak, p. 275-277.
[45] The detail can be found on page 118, of *Kitchanukit*.
[46] Alabaster, p. 3.
[47] Chaopraya Tippakornrawong, p. 1.
[48] Ibid., p. 2.

author also states that 'though I may be wrong still, what I wrote will serve to stimulate men's thought.'[49] *Kitchanukit* was the first book printed and published by a Siamese without foreign assistance. One could regard the views expressed in *Kitchanukit* as those of Mongkut who, as monarch could not, according to Royal etiquette, address the public directly on such matters.[50]

Kitchanukit contains two parts. The earlier part explains common natural phenomena by using questioning and answering technique. For instance, the author asks why the seasons change, how earthquakes happen, and how comets occur. The latter part focuses on debating and comparing Buddhism and Christianity. The author questioned the Biblical view that God was the creator of everything, but confirmed that the Buddha knew the truth of the earth while being aware that what he knew was in conflict with Thai people's beliefs. The author criticizes *Traiphum* many times in his book: for instance, that the *Traiphum*'s explanation that it rained according to seraph's will, does not have any supporting evidence.[51] Another example of *Traiphum* critique is *Kitchanukit*'s description of the earth; it explains that the Earth's shape is spherical, not flat as a lotus leaf with a giant fish, called Anon, supporting it underneath as said in *Traiphum*. According to the content, *Traiphum* was criticised as being outdated. Thippakornrawong suggested that some content in *Traiphum* should be understood as metaphors; other elements as folklore; some content has symbolic meanings, which cannot be interpreted straightforwardly.

---

[49] Chaopraya Tippakornrawong, p. 2.

[50] Reynolds, 2003, p. 214.

[51] Chaopraya Tippakornrawong, pp. 20-23.

It is worth examining why the book was published and under what circumstance was the author encouraged to write and publish the book. Thippakorawong, the author of *Kitchanukit* stated in the preface that the book was written because he was dissatisfied with the limitation of Thai books' variety, mainly romance and tales; also, he criticizes that most of the available books were not beneficial to the readers.[52] One explanation for the small-scale of the book market was the low literacy rate, itself a result of an education system which was almost entirely restricted to the elites. Only after the 1900s, the education began to be systematised and organised, due to the establishment of the government Education Department in 1889.[53] Education was accessible to an increasing number of Thai people from all sections of society, at least in theory. From the above evidences, it is clear that *Kitchanukit* was written and published when the book market was so small, although it is impossible to gather the number of its copies. However, the figure of a newspaper circulation which was available in the same period could shed some light on the discussion. As noted above *The Bangkok Recorder* published its first volume in 1844 but it lasted only a year.[54] The second period of *The Bangkok Recorder* started in 1864; it discontinued in 1866. In the first period of *The Bangkok Recorder*, there were 35 subscribers in total; 33 of the subscribers were royal family members and aristocrats, only 2 were commoners. In the second period of publishing, the subscription was higher, but it was still rather low at around one hundred

---

[52] Ibid., p. 2

[53] Ibid., p. 116

[54] *The Bangkok Recorder*'s editor, Dan B. Bradley's aim, as he conveys, was, 'to make *The Bangkok Recorder* a telescope for the Siamese to see the world.' Bradley was an American missionary who was trained as a medical doctor, was one of the most influential missionaries in Siam at that time. He brought the printing press from Singapore with him in 1835. The main cause of *The Bangkok Recorder*'s termination in the first time was the death of Bradley's wife, which led him to decide to go back to America. Moreover, the closure could have been because of the low subscriptions.

copies.[55] These subscription figures suggested the estimated number of *Kitchanukit* which was published a few years later. *Kitchanukit* and *The Bangkok Recorder* could have had the same target readers. The estimated small circulation of *Kitchanukit* and the low literacy rate at the time, demonstrating the small book market size which made the Science-Buddhism dialogue book market an even smaller market – if we could call that a market at all. However, the book was written and published despite the size of the market. It indicates that the writer and publisher did not set the sales figures as his priority. Political circumstance had been a strong motivation for the writing of the book.

The threat from imperialism and the challenge to Buddhist values urged King Mongkut to feel that his country was backward and in need of reforms. Yet he was forced to cope with the drastic shifts brought into his kingdom by western-oriented reform. He made changes slowly, for instance, he started the publication of a government gazette and allowed the law to be printed; he broke with tradition by allowing his subjects to gaze upon his face; he allowed women some choice in marriage; and he recruited foreign specialists. He also tried to make Siam a 'civilized (siwilai)' kingdom. The Thai term 'siwilai' was transliterated from the English word 'civilized'. Siamese elites in the later nineteenth century were concerned with a quest for siwilai as a conceptual scheme established by the west. Therefore the idea to make Siam siwilai ranged from issues of etiquette to material progress including new roads, electricity, new bureaucracies, courts and judicial system, law codes, dress codes, and even white teeth.[56] Although Siamese elites at that time wanted Siam to be siwilai, they also

[55] Sukanya Tirawanit, cited by Thanapol Limapichart, 'The emergence of the Siamese public sphere: colonial modernity, print culture and the practice of criticism (1860s-1910s)', *The South East Asia Research*, vol. 17, Number 3, November 2009. p. 369.

[56] Elias, 1978, cited by T. Winichakul, 1995. *Siam mapped : a history of the geo-body of a nation*, Chiangmai: Silwkorm Books. p. 529.

rejected any attempt to couple siwilai with Christianity.[57] Consequently, the Siamese elites tried to retain and confirm their relative superiority as the traditional imperial power in the region - for although Siam was not formally a colony, it was no doubt under the strong influence of European colonialism. From my point of view, the attempt of the elites to make Siam a civilized and partially westernized kingdom, under the threat from the west, confirmed that they were adopting active and selective discourses of partial westernization.

It is important to note that the practice of encounter with the West and demythologizing the Buddhist tradition were conducted by the elites. The integral factors were the political system and the low rate of literacy among commoners. Siam was governed by the absolute monarchy, therefore most of the important administrations work were in the hands of the monarch and his noblemen, and most importantly most Siamese only had partial access to informal education in the monasteries.[58] The education system was not established until the next reign, King Chulalongkorn (1868-1910), the son of King Mongkut (1851-1868). Western science was taught for the first time in Suan Anand School, set up in 1878, under the instruction of an American missionary, the school could offer arts and sciences as potentially useful to the country. However, the king still strictly prohibited 'the teaching of Christianity'.[59] The distinguishing seems to be a strategy that the Siamese elites employed in encounters with the West, they distinguished Western science from Buddhism

[57] Winichakul, 1995, p. 520.

[58] Reynolds, 2003, p. 213.

[59] Wyatt, D.K., 1969. *The Politics of Reform in Thailand: education in the reign of King Chulalongkorn*, New Haven: Yale University Press. p. 77.

This section shows two important aspects, first the significant role of Buddhism as an integral tool for the elites to come to terms with the West. The discourse encouraged the elites to demythologize *Traiphum*, the Buddhist traditional doctrine in order to show the West its genuine traditions. Second, it shows the substantial role of the elites in the encounter with the West. In recent times, the fear of the West is no longer colonialism, but it comes in a form of the globalisation in the twentieth century. The dialogue between science and Buddhism remains although the main party has slightly shifted from the monarchs to the middle-class. The state, which has changed from the monarch to the government due to the change of political system has not employed Buddhism in the encounter with the West, but it has promoted nationalism instead. One explanation for the practice is that Buddhism has been distinguished from science in the contemporary, a topic I will emphasise in the later chapters.

2.2 The overview of science position in the contemporary Thailand

This section offers an overview of the contemporary science position in Thailand reflecting upon the government's science policy and science communication policies. I show the structure of science organizations in Thailand to provide relevant background for the following chapters. This section divides into two subsections: the first section will trace the establishment of the main governmental science organization, the Ministry of Science, its settlement of the National Science and Technology Development Agency (NSTDA) and a couple of organizations. The second section is dealing with the National Economic and Social Development plans (NESD plans), an across the board recommendation plans for the government. The changes in the NESD plans over the long period of time since its first plan, and reflect the country's shift of focal issues over time.

These organizations and plans reflect the government's main purpose of economical driven science.

2.2.1 The Ministry of Science and Technology

The scientific fundamental structure in Thailand was established under American influence; the establishment was as late as the mid-twentieth century. To draw closer attention to my argument, the late beginning of science development in Thailand could have been a cause for the country's failure to be part of the celebration of Einstein in the early twentieth century, particularly when he visited Asia in 1922, which is explored Chapter 4.

The US's aid in establishing the scientific foundation in Thailand seems to be a political by-product, as the US and Thailand had mutual aims to contain the spreading of communism. The mid-twentieth century, when America had strong influence and dominance over the Thai government, the US directly assisted in the establishment of many approaches such as human resources and economic aid. In the period 1951-1957, Thailand was the beneficiary of $149 million in US economic aid and $222 million in US military aid.[60] It was the period that Thailand attempted to significantly develop the country's fundamental structure. The fundamental foundations for the development of science were established with the support of the US and navigated by the National Economic Board and the Research Federation. These two organizations were also established by the Americans. The National Economic Board was founded in 1950; its initial name was the Thai National Economic Federation. Its main duty was to advise the cabinet regarding the nation's economy. However, the committee itself was an advisory

[60] Wyatt, 1969, p. 272.

panel without regulatory power. In 1959, advisors from the World Bank suggested that the Thai government add a social role to the federation. Finally, in 1972 the National Economic Federation changed its name to 'The National Economic and Social Development Board' so as to better reflect its task and aims. The role of the NESD board is discussed in the next section.

It was in this context that another fundamental structure regarding the nation's research, the Thai Research Federation, was established in 1956. Its name was changed to 'The National Research Council of Thailand' in 1972, and its duty was to advise the government regarding research and offer funding to research in various fields. At the beginning, its objective was to accommodate scientific research.[61] This federation of research played an important role in constituting the Ministry of Science and Technology.

Set up in 1979, the Ministry of Science and Technology has had a close relationship with the United States since its initiation. The initial idea of establishing the Ministry of Science was brought up for discussions during this period. This first arose in a seminar held by the Research Federation and the National Academy of Sciences, an American institution, in 1972. The seminar was held in order to develop Thai science research policy. One of the conclusions reached from the seminar was the need to establish a national organisation to take responsibility for science and technology. However, the idea was not immediately implemented. In 1976 the Research Federation then cooperated with Mahidol University and the United States Information Service to

[61] Yongyut Yuttawong, *Thai Science and Technology: from the past to the present* (2000), Bangkok: the National Science and Technology Development Agency (NSTDA), 2000, p. 10.

hold a seminar on the topic of 'planning science policy'.[62] Following another seminar, it reached the conclusion with a proposal submitted to the government, proposing the idea of establishing a Ministry of Science. The Ministry of Science was finally established in March 1979. The Thai Ministry of Science and Technology now acts as the main state agency taking full responsibility regarding science and technology related issues.

The USA assisted the Ministry of Science and Technology through advisory agencies such as the United States Agency for International Development (USAID), the National Academy of Sciences and the United States Information Service, as mentioned previously. In 1983, the United States sent Professor Ernest J. Briskey from USAID to advice on science research. He believed that Thailand had strong potential to be outstanding in biosciences, metallurgy, materials science, electronic and computer technology. However, there is not any document which explains this in further detail.

The US also offered loans and research funding to the Ministry of Science and Technology through USAID's 'Science and Technology for Development' project.[63] However, this project depended on US foreign policy, so was sometimes frozen when the USA disagreed with Thai domestic political policy. Apart from the USA, Thailand took advice from a Korean ex-minister of science in planning science and technology policy in 1980.[64]

The period of the mid-twentieth century was also when higher education expanded internationally and domestically. The USA offered full funding for Thai students who wished to study science at postgraduate level in the US. Therefore, in the

[62] Ibid., p. 11.
[63] Yongyut, 2000, p. 14.
[64] Ibid., p. 13.

late 1950s there was a small group of the most intelligent of Thai students that decided to resist the social trend by choosing to take science at university level rather than medicine.[65] Their inspiration perhaps came from the flourishing science atmosphere in the US. This group came back from the US and took significant roles in science and technology education.[66]

Higher education in Thailand was greatly broadened in the 1960s. Before the 1960s, Thailand had very few universities; Chulalongkorn University was the first Thai university, founded in 1916 and Thammasat University was the second, established in 1934. There were only a few other universities. However, beginning in the 1960s the number of universities in Thailand rapidly expanded from 5 to 17 in a period of only ten years (1961-1972), and student enrolment increased dramatically from 15,000 to 100,000.[67] Strikingly, this was the first time that some 'small-town lower middle class' students had entered the higher education level.[68] It seems that higher education began to be accessible to non-privileged Thai people. Some new universities were established outside the capital, in the northern, north-eastern and southern parts of the country. Subsequently, specialist universities were founded, such as Kasetsart University which specialised mainly in agricultural studies. Chulalongkorn University was the only university that taught science at tertiary level, until in 1958 the second institute teaching science was established at the Mahidol University. Later on, almost every university in Thailand started to teach science. The universities opened up access to education for a

---

[65] ibid., p. 36.

[66] Yongyut 2000, p.36

[67] Pongpichit P. & Baker, C., 1997. *Thailand : economy and politics*, Kuala Lumpur ; Oxford: Oxford University Press. p. 301.

[68] Citing B. Anderson and Mendiones, 1985, pp. 41-420 in Pasuk and Baker, 1997, p. 301.

high number of middle-class people and the significance of scientific communications was at an important juncture in Thailand.

In 1992, the Ministry of Science and Technology changed its name to the Ministry of Science, Technology and Environment in order to embrace environmental issues more directly. However, with the reform of the bureaucratic system in 2002 it was changed back to 'the Ministry of Science and Technology'. It was also recognized that the Ministry of Science and Technology is run under the civil service and state enterprise that is not sufficiently flexible in administration and budget management. Since it had not been able to attract outstanding scientists, the Ministry of Science and Technology established a more flexible agency to deal more directly with scientists in 1992.[69] The National Science and Technology Development Agency (NSTDA) was established under the Science and Technology Development Act of 1991 and would serve under the umbrella of the Ministry of Science and Technology. This Act was intended to ease the science and technology agencies' administration systems in order to make real progress in science and technology development. The NSTDA had a new administrative path operated under the 1991 Act, operating autonomously with guidance and polices set by its governing board, appointed by the cabinet.[70]

The NSTDA board comprises 22 members selected equally from the public sector and the private sector, and chaired by the Minister of Science and Technology; the secretary of the Minister of Science and Technology is vice chairman and the NSTDA's president is a secretary of the board.

---

[69] Yongyut, 2000, pp. 13-15.

[70] www.nstda.or.th/about, accessed 20 August 2009.

The NSTDA sets its mission as the following: to accelerate the growth towards a knowledge-based society through science and technology; to promote research for strengthening Thailand's sustainable competitiveness; and also to transfer technology and develop human resources in science and technology.[71] The NSTDA houses five science research centres which are distributed according to their main areas of research: the National Centre for Genetic Engineering and Biotechnology (BIOTEC); the National Metal and Material Technologies Centre (MTEC); the National Electronic and Computer Technology Centre (NECTEC); the National Nanotechnology Centre (NANOTEC); and the Technology Management Centre (TMC). The Ministry of Science and Technology has set its objective as transferring research knowledge to the public so as to strengthen the communities' productivity and response to government policy. The NSTDA has established the Science and Technology Knowledge Service (STKS), to provide science and technology knowledge to researchers, journalists, productive sectors and the public. There is also the Science and Technology for the Rural Centre which aims to transfer science and technology to rural communities and to assist in applying knowledge and hence increase their productivity.[72]

The latest department launched in 2007 under the NSTDA was the Thai Science Media Centre (Thai SMC). The centre is adopting the British Science Media Centre as its role model as is reflected in its name.[73] It sets its aim similarly to the British Science

[71] www.nstda.or.th/about, accessed 20 August 2009.

[72] www.nstda.or.th/about, accessed 20 August 2009].

[73] Aomjai Trimek (PhD) a Vice President taking responsibility for 'science and technology for society' at the NSTDA,) interviewed by Saowanee Chinnalong, Pathumthani, 10th July 2010.

Media Centre, to promote science stories in news media, the Thai SMC focuses on the 'accuracy' and 'effectiveness' of the science news.[74]

The origin of the Thai SMC is intriguing. As I discussed in the introductory chapter it was established after a wave of public anxiety caused by reports of mysterious objects found after rainstorms published by a few Thai newspapers, tabloid 'coloured' newspapers in particular. There were reports of similar incidences in many places including Bangkok and other provinces in mid May 2006. The reports provoked public attention because the news content did not identify what the objects were. They were suspected by members of the public to be living creatures as they could increase their size when placed in water; some believed the objects could be UFOs. The villagers who found the objects worshipped them, and some people who found them believed they could heal uncured diseases. The news was continually published on the front pages of a few newspapers for a few days as there were some similar incidences in several places. It took several days until the authorities' departments, the Ministry of Public Health and the Ministry of Science and Technology could hold a press conference to inform the public of the result of their investigation. The formal investigation concluded that the object was a cooling gel sheet used for reducing temperature by putting it on the forehead of a person who has fever.[75] The evidence caused crucial attention in many respects, for instance, the print media was criticized for only aiming to sell its news without trying to do some investigation in the case, while the government was criticized for delaying its response to the incident.

---

[74] http://www.nstda.or.th/sci2pub/thaismc/aboutus.php, accessed 20 August 2009].

[75] http://www.manager.co.th/Science/ViewNews.aspx?NewsID=9490000062968, accessed 20 August 2009]. http://www.ryt9.com/s/bmnd/718781, accessed 20 August 2009.

This section offers the overview of the government's science policies and organizations. Next, I review the related plans in science development.

2.2.2 The critical review of the National Economic and Social Development (NESD) plans and other science communication related plans

In this section, I examine the government's plans and policies, focusing on the National Economic and Social Development (NESD) plans, acting as the umbrella for government. The plans provide opinions and recommendations on economic and social development to the cabinet. Every four years, the NESD board reviews the cabinet's achievements according to the recommended plan and formulate a new plan. The NESD plan covers various aspects.

In fact the earlier plans concentrated on the economy before the committee and government at the time realized the importance of the social role in the development. The analysis shows the change in the science policies in the last fifty years. The science policies shifted from focusing exclusively on science education to extending the scope of its policies to science communication which target the public.

The first and second NESD plan (1963-1966, 1967-1971) focused mainly on the economic development of Thailand; until 1972, when the third (1972-1976) and fourth (1977-1981) plans both also addressed the social aspects of planning. The fifth (1982-1986), sixth (1987-1991), and seventh (1992-1996) plans attempted to stabilize the economic planning process while also seeking to improve the quality of life of the people in the rural area. Since the eighth plan (1997-2001) until the present, there has been a paradigm shift away from economic issues to concentrate more on the human aspects as the focal point of development. One of the major causes of this shift was the country's Economic Crisis of 1997.

The earlier plans reflect the Thai government's aim to increase the number of scientists to fulfil its strategic plan of expanding the nation's economic competitiveness on the international stage. The first and second plans (1963-1966, 1967-1971) sought to expand the fundamental structure of the country, unsurprisingly the education policy was given priority. The first and second plans recommended that Thailand should advance and develop science education in higher education because science is the foundation for medicine and engineering. These two professions were urgently needed. The third plan (1972-1976) given the deficiency of the scientific human resources expressed that 'we have to be prepared and get our nation to be ready to enter the era of science and technology' and that given the deficiency of scientific human resources, Thailand needed a supply of scientists to 'serve the expansion of industrial economy.'[76] However, I found that the third plan does not specify any strategy to achieve this goal. As a result, by the end of the third plan in 1976, science graduates were only 0.6 percent of the overall number of graduates.[77] Consequently, after the application of the third plan (1973-1976), the Thai education system has significantly changed, which may be due to the failure to increase the number of science graduates. This change was clearly demonstrated in the National Education Plan of 1977.[78] The plan of 1977 expressed that the earlier plans of 1960 and 1971 'failed to respond to essential needs of Thai society, therefore it is vital to revise the plan'. Whereas the former plans were very concise - they mainly classified the Thai education system rather than stating explicit strategies[79]

[76] The Third National Economic and Social Development Plan (1972-1976), p. 157.
[77] The Fourth National Economic and Social Development Plan (1977-1981), p.124.
[78] The plans can be downloaded from the Office of the Education Council: http://www.onec.go.th/plan/surang/plan_su.htm, [accessed 12/11/2009].
[79] http://www.onec.go.th/plan/surang/15p.pdf, [accessed 25/02/2013].

- the National Education Plan of 1977 set out the main aim to apply the formal education system to developing human resources, distinguishing this from an informal education system.

While the fourth NESD plan (1977-1981) did not make any statement regarding science in particular, the fifth NESD plan (1982-1986) stated that science was one of the major areas that urgently needed to be developed hence to improve productivity in Thai industry and agriculture.[80] This was the plan launched after the establishment of the Ministry of Science in 1979, and it is significant that its main aim was to apply science and technology to improve productivity in Thai industry and agriculture. The National Economic and Social Development plans reflected the government policy of focusing on science education and the use of scientific materials to improve the competitiveness of the country. As part of the plan to raise the profile of science as an indigenous Thai enterprise, in 1982 the historic figure of King Mongkut was applauded as 'the Thai father of science'. This representation was launched during a meeting of scientists held by the Science Society of Thailand to celebrate his outstanding achievements and interest in modern science. The meeting agreed on establishing a 'National Science Day' to be held annually on the eighteenth of August and to launch the National Science Week. This commemorated the date of a total solar eclipse that King Mongkut had long ago accurately calculated would be observed at Wahkor on the eighteenth of August 1868.[81]

The sixth plan (1987-1991) pointed out that the government needed to accommodate the society which supported the learning of science and to promote science consciousness among the Thai public. First, Thailand's expenditure on research

[80] The Fifth National Economic and Social Development Plan (1982-1986), p. 1.

[81] Science Society of Thailand website: www.scisoc.or.th, [accessed 2/11/2009].

was very low compared to that of developed countries, suggesting that the government should encourage the private sector to invest more in science research. Secondly, it indicated that Thailand did not yet have the potential to produce its own science and technology and reiterated that imported technology was not adapted and developed to be suitable to Thai society. The final key aspect concerned the human resources for science, it mentioned that Thailand needed a policy, plan and agency regarding science. The Ministry of Science had clearly failed to implement the plan under its administration to focus on common goals. It criticised the quality of existing science human resources as lacking the experience needed for the industrial sector.[82] It is clear that the sixth NESD plan gave science and technology crucial attention, particularly science for economic purposes. This reflected the government's outlook that science was for economic development and dismissed the issue of science for the general public. One possible explanation is that the government's perspective towards science communication was that is equivalent to science education. Therefore, putting science as a compulsory subject in the primary and secondary education system was perceived as being sufficient.

It is worth noting that in the third to the sixth NESD plans, a recurrent theme is a recommendation that the government needed to promote science and technology as a tool to increase industrial productivity and thus increase the quantity and quality both of scientists and of other human resources in the scientific field. The seventh NESD plan (1992-1996) urged the industrial sector to apply science with the aim of greater productivity, especially in the development of new technologies to increase agricultural

[82] The Sixth National Economic and Social Development Plan (1987-1991), pp. 147-155.

productivity.[83] This plan also sought again to boost the number of engineers, scientists, mathematicians and technicians trained to work in Thailand.[84] This plan initiated the idea to build a science museum; accordingly, this was built in 1994 and was opened to the public in 2000. It is the main science museum in Thailand and is part of the most recent strategy of the government to encourage the middle-class public to engage with science.

The eighth NESD plan (1997-2002) was similar to the seventh plan but explicitly expressed the concern for technology to be transferred to the public and industrial sector.[85] There was no elaboration in this plan on how the suggested transfer would have been implemented. However, the government presumably conceived this process in terms of the deficit model of science communication as most likely to bring success. In this thesis I suggest that there is a connection between the Thai government's ineffective public engagement with science using this deficit model, and it relative lack of success in successive plans to boost the economic productivity of indigenous Thai science. It was only in the ninth NESD plan of 2002-2006 that the Thai government sought explicitly 'to foster science awareness among the youth and distribute science-learning centres across the country so that the public could easily access them'.[86] Yet, as I have shown, even though raising science awareness became a national strategy, these recommendations were not completely implemented by the government and the Ministry of Science and Technology.

---

[83] The seventh Nation Economic and Social Development plans (1992-1996), pp.61-72

[84] Ibid.

[85] The eighth Nation Economic and Social Development plans (1996-2001), pp.91-93

[86] The ninth Nation Economic and Social Development plans (2002-2006), pp.102-104 http://www.nesdb.go.th/Default.aspx?tabid=91 [accessed 2/11/09].

The general lack of success in implementing the recommendations from the NESD plans, as stated earlier, and Thailand's low ranking in league tables of international competitiveness assessing by the International Institute for Management Development (IMD).[87] In particular, Thailand being placed last on the index regarding scientific infrastructure in the annual World Competitiveness Yearbook (2001) surely brought no delight to the Thai government. [88] These circumstances were most likely to be the main reasons for the launch of the National Science, Technology and Innovation strategic plan' (NSTI) for 2003-2013 to improve Thailand's position in the long-term processes of competitive economic globalization.[89] The plan was under the monitoring of the NSTDA until 2008, the 'National Science, Technology and Innovation Policy Committee (NSTIPC)' was established; it is the most recent organization to take responsibility of science policy. The NSTIPC has set up five urgent strategies in the plan as follows: the first is to increase the technology potentiality and the communities' productivity. The second is to develop science and technology human resources in order to respond to the need of the economic and social sectors. The third strategy is to develop Thailand's science and technology infrastructure to stimulate and support science, technology and innovation. The fourth is to raise science awareness in the Thai public in order to achieve the public support for science, while the fifth strategy is to increase the effectiveness of the national system for science administration system.[90]

---

[87] The institute ranks the scientific infrastructure of nations according to four sub-factors: their budgets, human resource, environment for research and design, and the number of patents produced per year.

[88] The National Science and Technology Development (NSTDA), *Thailand Science And Technology Profile 2007* (Bangkok: The National Science and Technology Development (NSTDA), 2008, pp.49-56

[89] The National Science and Technology Strategic Plan: (2004-2013), p.12

[90] Ibid., pp.38-61

Thus, I have reviewed the government's plans and policies; these plans and policies do not cover the government's science organizations' perspective and assessment, the data I view as important in order to understand the current science position in Thailand. Therefore, I examine the government's perspective towards and assessment of the science situation in Thailand. To some extent the government considers its science performance as not as 'effective' as it wants to achieve. The explicit confirmation is the country's position in the international competitiveness assessing by the IMD as mentioned earlier. The assessments are viewed as Thailand's science profile and position in the world.[91] It is certain that any government would have wanted to be in a high ranking position to show its potential competitiveness that would attract investors for the Thai case. The Thai government has been trying to improve its position as demonstrated in the launch of the strategic plan and new organization, as mentioned. Moreover, the government set up a committee to determine its annual science performance by using the factors assessed by the IMDB and also conducting a comparative analysis to the assessment by the IMDB. The national committee contains representatives from all the foundation organizations, showing the government's seriousness in pursuing the issue. The assessment is published every year as *Thailand Science and Technology Profile*.

Thailand's position in the IMDB world competiveness from 2005-2012 has never been better than 25th ranking out of around 50-60 countries being assessed each year.[92]

---

[91] Tananuch Tri-thippabutr, the secretary of the National Statistical Office. The National Science and Technology Development Agency, *Thailand Science and Technology Profile 2007* (Bangkok: The National Science and Technology Development Agency, 2008, n.p.

[92] See information in Sti.or.th, 'Thailand Science and Technology Profile' <http://www.sti.or.th/th/index.php?option=com_content&view=article&id=121&Itemid=142> [accessed 11 March 2015].

Being in the low rank in the IMD reports, illustrates the low level of competitiveness particularly in comparison to its neighbours, as the NSTIPC states 'Thailand is not successful in term of science and technology competency comparing to her neighbours such as South Korea, Taiwan and Singapore'.[93] This fact urged the government's organization, i.e. the NSTDA to find solutions and try to improve its ranking. One of the causes that the NSTDA often commented on was the lack of scientific content in the media.[94] Similarly comments were made by another scientist who also stated that science obstacles in Thailand are caused by the failure of science education, the lack of science content in the media, and the ignorance of industry in terms of their funding (or lack of funding) towards science research.[95] However, a survey by the Media Monitor seems to contradict the criticism that scientists have made.

According to the Media Monitor Project, a survey on the science content on TV, 'Scientific content on free TV' in 2009, it found that there were twenty-six programmes presenting science and technology in five channels (3,5,7,9,11, and Thai TV). These science and technology programmes comprise 1,137 minutes air time per week or 1.94 per cent of total programmes.[96] Many of these programmes were imported from other countries. Unfortunately this survey does not reveal its detail on methodology, thus it needs to be interpreted with care. The survey was presented in a joint press conference

---

[93] Sti.or.th, 'About Us' section. <http://www.sti.or.th/th/index.php?option=com_content&view=article&id=105&Itemid=96> [accessed 11 March 2015].

[94] The National Science and Technology Development (NSTDA), *Thailand Science And Technology Profile 2007* (Bangkok: The National Science and Technology Development (NSTDA), 2008), pp. 30-45

[95] See for example Yodhathai Theptaranon, pp.113-115

[96] The Media Monitor Project run by The Foundation for Media Literacy which is a division under The Thai Health Promotion Foundation. It is an independent state agency funded by 2 percent surcharge tax of tobacco & alcohol excise taxes. It aims to promote well-being in 4 dimensions: Physical, Mental, Spiritual and Social.

and seminar on the same topic, in August 2009. The event was reported in a few newspapers e.g. *Manager*, *Krungthepturakij*, and some other news reporting websites e.g. Sanook. The reports use a criticising tone when noting that the proportion of science programs is very small.[97] Since, there is no other survey on similar subjects in Thailand available to show the comparison, I will draw a comparison between the survey on Thai free TV and BBC. In a research conducted in the UK in 2011 by the science communication group, Imperial College London shows that about two percent of the content on the main BBC's four channels comprises science.[98] Although one could question the methodologies of these two surveys, in particular their definition of 'science content', to a certain extent the similar proportion of science in TV between these two countries shows that Thailand is roughly in the same scale.

Perhaps the NSTDA's assumption regarding the lack of science content in the media as one of the obstacle for the country's competitiveness is not so compelling, although it uses an observation on science programmes on the primetime in free TV, showing that only two channels present science programmes in their primetime.[99] However, the survey on the overall content does not seem to support the NSTDA's claims. I view this contradiction as a puzzle that the NSTDA could have been mistaken regarding the genuine challenge in developing science and technology in order to enhance the country's international competitiveness.

---

[97] See for example, *Manager*, 'Speechless, TV Has Less Than 2% Science Content. The Scholars Suggest Increasing So the Public Will Be Less Superstitious', 2009 <http://www.manager.co.th/QOL/ViewNews.aspx?NewsID=9520000093536> [accessed 12 March 2015].

[98] F Mellor, S Webster, and A R. Bell. Content Analysis of the BBC's science Coverage. 2011.

[99] The NSTDA's report defines the primetime in Thai television is the period from 18.00-22.30 pm. The NSTDA, p. 33

Another comment that scientists view as a challenge to science development in Thailand is 'the Thai public is cold toward the development of science and technology.'[100] Although Tanapol and Kittiwat did not elaborate on the notion of 'cold', it can be understood as having an ignorance regarding science, and possibly negative to science. However, the NSTDA's survey on the Thai public attitudes toward science, has shown not quite the same to Tanapol and Kittiwat view. The survey is the first and only survey of the public's attitude toward science on a large scale, it has been conducted by a collaboration between two government's agencies, the NSTDA and the National Statistic Organization, in 2008.[101] The survey used the questionnaire on public attitudes toward and understanding of science and technology developed by the National Science Foundation (NSF); the original questionnaire was synthesized with an adapted version developed for a Malaysian survey of public awareness of science and technology.[102] It is worth noting that the 'science literacy' survey developed by the National Science Foundation (NSF) and adapted and used by the Thai surveying agencies was on the receiving end of some criticisms, in particular from some British scholars.[103]

This 2008 survey conducted by the NSTDA and the National Statistic Organization sampled 5,800 members of the Thai general public, from urban and rural communities

---

[100] Tanapol Wirasa and Kittiwat Uchuphalanan, 'Policy and Institutes of science and Technology in Thailand', *The Thai Science and Technology: from the past to the present*, the National Science and Technology Development Agency (NSTDA), 2000, p.340.

[101] W. Tanapol and K. Uchuphalanan, p. 345

[102] Ibid. p.341

[103] M W. Bauer, N Allum, and S Miller, 'What can we learn from 25 years of PUS survey research? Liberating and expanding the agenda'. *Public Understanding of Science,* vol. 16, 2007, pp. 79-95. The approach taken by this particular form of 'science literacy' survey was criticised in many regards. First, the survey integrated the assumption that the public should (and possibly would) be familiar with science knowledge. Furthermore, it implements the deficit model. The deficit model may work well in the study of science education but it was criticised for influencing the attitudes of science policy makers by presuming that the public needs to be qualified in science in order to be entitled to participate in decisions regarding scientific policy.

and only sampled those who were over eighteen years old. The survey revealed that the public had an adequate level of knowledge of science and technology, 68.9 per cent of the participants correctly answered the scientific quiz provided in the questionnaires. In relation to public attitudes toward science and technology; the survey revealed that more than 70 percent of the Thai public had positive attitude toward science and technology with nearly similar number - six out of ten people - agreeing that science and technology is an important factor in driving national growth and therefore agreeing that the government should support scientific and technological research and development. This survey shows that the respondents have good understanding in science and positive attitude toward science, opposite to what of the government's perspective.

However, when the participants were given lists of names of people in varied professions such as politicians, economists, athletes, and scientists their recognition of scientists was very low.[104] Those surveyed had a high degree of recognition of Thai politicians, athletes, soldiers, and policemen but only 30 percent of the respondents recognized the scientists listed.[105] In addition, the respondents were more familiar with international scientists than Thai scientists. Despite being positive to science, the respondents expressed very weak desire to apply science as their own or their children careers. Only 0.9 percent of the respondents wanted to be a scientist and as little as 0.7 percent wanted their children to be scientists.[106] The finding correlated Aphiya's findings that, although the general public in Thailand have a positive perception and

[104] The NSTDA, 2009, p. 207
[105] The NSTDA, 2009, pp. 207-208
[106] The NSTDA, 2009, pp 210-211

understanding of the importance of science and scientists to some extent, they are not interested in science or acquiring scientific knowledge or pursuing a career in science.[107]

The public's perspective toward science, based on the findings by the NSTDA's and Aphiya's surveys could be understood as the apparent paradox that the Thai public may have positive attitudes towards science but also feel separate from it. It raises a question whether the public's feeling of separation from science could possibly be explained by the main theme of my thesis; they are interested in another kind of science--contemplative science. That is why the public is viewed as cold or ignorant to the economical science which is interest of the government. I may take the statement further that to suggest that to some extent it seems that the public believes in the significant scientific component in Buddhism, that is they may regard Buddhism as science and to them Western science is unnecessary.

Another critical aspect of the Thai science policies and practices are the attempts to establish the notion of 'Thai science'. The discourse of building up the concept of 'Thai science' can be found in various places i.e. the government's science documents, and its media, popular books, television programmes, and science exhibitions. This chapter will emphasise the government's policies while the government's practices on media will be discussed in Chapter 6.

It is always risky to pinpoint the beginning of something, however, it seems that the government has been trying to depict 'Thai science' and illustrate the development of 'Thai science'. The creation of the notion 'Thai science' has been shaped by nationalism and royalism, two main components of Thai society. The narrative of 'Thai

---

[107] Aphiya Hathayatham, 2005, 'The Public Awareness of Science in Thailand: A Case Study on Biotechnology' (unpublished Ph.D., Australian National University). p. 430

science' can be found in various documents on science published by the government and also in its science- related practices. The creating of 'Thai science' could be understood as a means to bring Western science close to the Thai public. The practice is an example of an attempt to blend anything foreign into another culture, the attempt may show the similarities between the foreign and local concepts – the term I use for the practice is the 'indigenization', which is used throughout the thesis. The 'indigenization' is a practice that the middle-class also employed in the Science-Buddhism dialogue, a theme explored in the following chapters. The scholarship on nationalism in Thailand is quite rich, particularly by international Thai studies scholars. The practice of indigenization or 'Thai-ification' are quite common for Thai as Thai studies scholars discuss elsewhere, although not specific to science.[108] Streckfuss argues that Thai individuals and Thai government fondly appreciate the 'Thai uniqueness', the ubiquitous expression linking with 'Thainess' the discourse developed in the late 1970s, although the drive of the discourse can be traced back to the late nineteenth century.[109] McCargo similarly argues that the view of Thai uniqueness permeates mainstream Buddhism: 'most Thai monks and Buddhist thinkers have preferred to espouse a particularistic worldview, placing Thailand as its centre', rather than advocating universalism.[110]

Next, I examine the government's documents to show its indigenization of Western science. The beginning of 'Thai science' was purported to be in 1868 when King

---

[108] For example see Thongchai Winichakul, 'Buddhist Apologetics And A Genealogy Of Comparative Religion In Siam',*Numen*, vol. 62, 2015, pp. 76-99 http://dx.doi.org/10.1163/15685276-12341356 ; D. Streckfuss, 2011, *Truth On Trial In Thailand: Defamation, Treason, and Lèse-Majesté***.** London: Routledge, particularly Chapter 11 pp.246-261.

[109] D. Streckfuss, 2011, pp.246-261

[110] D. McCargo, 'Buddhism, Democracy and Identity in Thailand', *Democratization*, vol. 11, 2004, pp. 155-170. <http://dx.doi.org/10.1080/1351034042000234576>.

Mongkut travelled to the countryside to watch the total eclipse of the sun. This narrative appears in a few documents published by the NSTDA, e.g. *Thailand Science and Technology Profile 2007.*[111] Yongyut Yuttawong, an acclaimed scientist who was awarded 'the outstanding Thai scientist' in 1984, and was the first director of the NSTDA and the minister of the Ministry of Science and Technology in 2006, makes similar claims regarding the beginning of Thai science and he also states that 'science and technology existed within Thai culture for a long time but they have different forms which diverge from the West.'[112] Moreover, the indigenization of Western science has also been shown in the government's practice of honouring King Mongkut (r.1851-1868) to be the 'father of Thai science' by the government in 1982. At the same time, the government also initiated the 'Thai science day' which later on became 'Thai science week'. The timing for the 'Thai science week' is also significant in expressing the nationalism underlying the practice. It selected the 18th of August to be the 'Thai science day' because it was the date that King Mongkut travelled to Wahkor district to observe a total solar eclipse that he accurately calculated.[113] The narrative on the accomplishment of King Mongkut has been well disseminated as it appears in the science textbook for M.1 (First year of secondary school).[114] By putting the narrative of King Mongkut in textbooks would make a certain impact on the students' nationalism.

The Thai government also encouraged the current royal family members in the indigenization of Western science, for example the current King Bhumibol Adulyadej

---

[111] NSTDA, p.30

[112] Yongyut Yuttawong 2000, 'The Establishment, Development and Current Situation of Thai Science and Technology,' in *The Thai Science and Technology: From the past to the Present*, edited by Yongyut Yuttawong. (Bangkok: National Science and Technology Development Agency (NSTDA)), pp. 2-24.

[113] Science Society of Thailand website: www.scisoc.or.th, accessed 2 November 2009.

[114] Online textbook http://www.scimath.org/ebook/sci/m1-1/student/, accessed 2 March 2015.

was honoured as 'the father of technology' in 2006. Moreover, to a certain extent, the government has supported the establishment of the Chulabhorn Research Institute, under the current King's daughter, Princess Chulabhorn's establishment of commemoration of the Queen's seventy-second birthday. The objective was to create an institution of academic excellence to train medical personnel in effective cancer treatment services, comparable to those in developed countries. In Chapter 6, I go into detail on the Thai science museum which was built to celebrate the Queen's sixtieth birthday. These practices demonstrate the government's attempts to indigenize Western science, although it is important to explore whether the themes in the government's indigenization of Western science are of interest to the public or they would rather have their own issues.

2.3 The science communication outlets in Thailand

This section shows there is a relatively small share of scientific content in the Thai media which are the science communication outlets in Thailand. I will observe three media: print, television, and the Internet. I will also review a survey relevant to my study. The data in this section is beneficial to the following chapters in determining the coverage of Einstein in the media.

2.3.1 Popular books

Book categories in most book stores in Thailand have a particular pattern similar to those bookstores in other countries, e.g. educational textbooks classified by subject, Art, Children's, Food, Health, Home and Garden, Psychology, Religion, Thai novels, translated novels, Travel, etc. While these categories are shared across Thai bookstores, it is interesting to compare science-related book classifications in three leading Thai

book stores: SE-ED, Nai-in, and Chulabook Center. SE-ED has a science section, which is sub-divided by science area, and also has a technology section. The Nai-in bookstores do not have a science section, but do have a computer/technology section instead, while the Chulabook Center offers a large science textbooks section. The books are divided according to science branch e.g. biology, physics, and chemistry. Chulabook Center also has a separate section on Technology and Computers. From this evidence, it would seem that the Thai book market puts more emphasis on technology over science, reflecting wider public interest and disinterest in these areas.

There is no 'popular science' section in any bookstore because this term is not recognised in Thailand. The term 'popular science', which has become a common book category Western bookstores, has no meaning in Thai. The notion does not have straightforward translation. Buncha Tanaboonsombat, a governmental scientist who writes scientific columns in newspapers and popular science books, suggests a Thai term of 'Wittayasat An Sanook' (Wittayasat = science, An = read, Sanook = pleasure) for popular science books.[115] He added 'another choice that came up was 'wittayasat samrup khontuapai' (Wittayasat = science, samrup = for, khontuapai = general readers) but I prefer the previous term.' From my point of view, the wittayasat an sanook shows an attempt to differentiate popular science books from science textbooks. It is likely that science books in Thai context are science textbooks as evident by books' categories in bookstores. After the interview with Buncha, I investigated more on the term, 'Wittayasat An Sanook', and found that the phrase was used as the series' name for science comic books aimed at children. The series were published the first time in 1985;

[115] B. Tanaboonsombat, interviewed by Chinnalong, Pathumthani, 2010

their origin was Japanese manga. However, the phrase has never been used to refer to 'popular science book'.

So far I have discussed the unfamiliarity of science communication related terms to Thai public. Such unfamiliarity reflects the difficulty that the Thai government faces in raising science awareness among the public.

My investigation shows that the term 'popular science book' neither exists nor is recognized in Thailand. However, there are a substantial numbers of books which could have fallen into such category on the market. They are categorised as 'documentary' or 'general knowledge' in bookshops. Some of these books are originally written in Thai, some are translations from other languages. Nonetheless, Thai bookstores have categorised them differently from the international bookstores. For example, books which would be classified under 'popular science' on the international book market are instead classified under 'applied science' section by SE-ED and the Chulabook Center.

Meanwhile, Nai-in classifies them under 'documentary.' It is also worth examining publishers' viewpoints on this matter. Sarakadee Publishing and *Matichon* Books are two of the largest publishers of popular science books on the Thai market. Both of the editors are familiar with the English term 'popular science' and they identify some of their titles as falling into that category but they assert that no bookstore would launch a popular science section. Suwat Assawachaichan, Sarakadee Publishing's Editor-in-Chief, claims that popular science books have no market segment from bookstores' point of view.[116] He added, 'I had tried to negotiate with some bookstores managers to

[116] Suwat Assawachaichan, Sarakadee Publishing's Editor-in-Chief. Interviewed by Chinnalong, 2011

launch popular science section shelves but they said that the section is not big enough because of the small number of popular science books and readers.'[117] Therefore, popular science books are classified as 'children's books' if they are aimed at children or 'documentary' if they are non-fiction. Suwat states that Sarakadee Publishing regularly publishes popular science books. *Matichon* Books Editor-in-Chief, Siripong Wittayawirot, said that although the *Matichon* group own a few bookstores but that none of them have a popular science section, despite the fact that *Matichon* Books have launched quite a few popular science books on the market.[118] He added that the bookshop section of the business is separate from the publishing section. *Matichon* Books are determined to publish popular science books. Siripong believes that there is a market for popular science books in Thailand and this is evidenced by the sales figures for *Prawat Yor Kong Kanwela (A Brief History of Time)* by Stephen Hawking, a popular book which the Matichon Books published. The book was reprinted more than twenty times and sold nearly 100,000 copies.[119] Therefore, the Matichon Books will continue publishing books on the theme.

It is also worth noting that *Einstein Phop, Phraputtachao Hen* sold more than 200,000 copies twice the copies of *Prawat Yor Kong Kanwela*, making it one of the bestsellers in 2008 and 2009. It is also worth pointing out that books in the 'religion' category consist mainly, if not exclusively, of Buddhist teachings; there are only a very few books dealing with the teachings of other religions, e.g. *Pratya Chewit (The Prophet)*, *Tao Hang Phisik (Tao of Physics)* both of which have been translated into Thai. The

---

[117] Ibid.

[118] Siripong Wittayawirot, *Matichon* Books Editor-in-Chief. Interviewed 26 July 2011

[119] S Hawking, Attachad Chadpum, trans. 2009. *Prawat Yor Khong Kanwaela (A Brief History of Time*). Bangkok: *Matichon* Publishing.

prevalence of Buddhist teachings amongst religious publications in Thailand is not surprising given 95 per cent of the population are Buddhists.[120]

2.3.2 Newspaper

Thai newspapers' significant character is they consider political issues newsworthy; this applies to newspapers in every category, tabloid, business or 'quality' newspapers. Political news and columns have a higher priority and tend to be in prominent sections of the newspaper including the cover pages, as well as the second and third pages. In contrast, other genres of news such as education, health, science and technology are in the middle pages, and are often skipped by the reader. Therefore, science news and science columns are unlikely to be on the front page. Research by Duncan McCargo and Suan Dusit Poll Rajabhat University confirm as such, McCargo states that Thai print media and newspapers in particular had a political element from their inception.[121] Suan Dusit Poll Rajabhat University surveyed nine newspapers' front-page headline for one year in 2005, it found that there were only two front-page headlines on science (health and environment).[122]

To gain a better understanding of the characteristic of each newspaper, I describe the general Thai newspaper environment, although I will elaborate more on three newspapers *Thairath*, *Matichon* and *Krungtheptueakij* as my main sources. The leading daily newspapers are *Thairath* and *Dailynews*; they have the widest ranges of readerships. *Thairath* was founded in 1950 and it claims to be the best-selling

---

[120]Data from the National Statistic Organization http://service.nso.go.th/nso/nsopublish/census/cen_poph43-wk.html, accessed 23 June 2011.

[121] D McCargo, 2000, Politics and the Press in Thailand: Media Machinations, London: Routledge, p. 7

[122] The data was referred to in the National Science and Technology Development (NSTDA), *Thailand Science and Technology Profile 2007* (Bangkok: The National Science and Technology Development (NSTDA), 2008), pp. 34-36. Unfortunately, the original document cited is not available since the reference given is an online source which is no longer available.

newspaper in Thailand, with a print run of one million copies and a claimed readership of twelve million people per day, as of 2012.[123] *Thairath* is a very powerful newspaper; it could be referred to as 'the country's second government.'[124] *Thairath* uses brash headlines and photographs of crimes and accident victims on its front page. Despite its tabloid style, *Thairath* is very influential in leading public opinion.[125] *Thairath* divides its content into ten sections: Royal News, Politics, Sports, Entertainment, Lifestyle, Technology, Economy, Education, Foreign News, and Provincial News but it does not have a science section. Instead, it has a Technology section, or Wittayakan in Thai, which reports primarily on computer, mobile and telecommunication stories. *Thairath's* front-page often presents folklore and supernatural stories both on its front page and in the provincial news section. *Thairath* offers readers an online version that is lively, with frequent news updates. *Thairath* also allows its registered readers to search its content from the previous six-months and read its online content without payment.

Daily News is *Thairath*'s rival and is the second best-selling newspaper in Thailand. *Daily News* divides its sections similarly to *Thairath*: Politics, Sports, Entertainment, Lifestyle, IT, Economy, Education, Foreign News, and Provincial News. It also has additional sections such as Crime, Society-Women, and Agriculture, with these additional categories differentiating *Daily News* from *Thairath*. The *Daily News*'s IT section is particularly interesting. Its title 'Information Technology', suggests a certain scope for the stories featured there. Nevertheless, from my initial survey, I found that

---

[123] Information from the *Thairath* website, http://www.*Thairath*.co.th/corp/index?subMenu=info, accessed 20th Jan. 2012

[124] McCargo,2000, p.44

[125] The Asia Pacific Perceptions Projects; media analysis. http://www.europe.canterbury.ac.nz/appp/media_analysis/paper_sources.shtml#thailand, accessed 1 June 2014

it does not limit its stories to technology and telecommunication and offers stories on Thai scientific research, science policy, and health science. It is striking that *Daily News*, a mass-circulation and sensationalist newspaper, gives significant coverage to Thai scientific research and science policy.

In 1978, *Matichon* was established by a group of progressive writers and journalists.[126] It prominently proclaimed itself as a 'quality newspaper' with its motto — 'quality newspaper for the quality of the country' — printed prominently on the front page. The Matichon group also produces *Khaosod*, a mass circulation and sensationalist newspaper. *Matichon*'s annual report states that its circulation has risen year on year, but it does not declare its actual sales figures.[127] Traditionally, *Matichon* focused on politics, but in recent years its coverage has broadened to include economic, business, crime, and soft news.[128] *Matichon*'s cover pages mainly feature political headlines, a typical characteristic of Thai newspapers, unless there are royal ceremonies or special occasions involving the monarchy, in which case special-sized photos and headlines dominate the front page.

Matichon divides its content into three major sections: a general news section, politics, provincial news and comments, an economic section that covers the domestic and international economy, foreign news, women, young generation lifestyle, sports, and entertainment, and a documentary section covering social and cultural events. Its structure is in the following manner: page two contains editorial content; pages three, six and eleven feature political columns; page four is devoted to society news, and

---

[126] McCargo, 2000, p. 11

[127] *Matichon* Annual Report 2004 http://info.*Matichon*.co.th/report/2547/th/config.php?nfile=*Matichon*th.txt&a=4, accessed 10 January 2011.

[128] McCargo, 2000, p. 82

focuses on politicians' activities; pages eight and nine are for local news; page ten is the lifestyle section. The lifestyle section covers medical and health topics, and the occasional science story such as the enactment of the Science and Technology Act in 2006.[129] Continuing on, pages twelve to fifteen of *Matichon* offer continued coverage of front page stories; pages seventeen to twenty focus on economic news and commentaries; page twenty-one is for foreign news; pages twenty-two to twenty-three deal with entertainment while pages twenty-six and twenty-seven are for educational matters; finally, page thirty-two is the 'online' section and focuses on technology, computers, and information technology.

Krungthepthurakit considers 'human interest' and 'new inventions' to be the main criteria for determining the news value of any event. Somsakul Paojindamuk argued that although the science journalists who work for *Krungthepthurakit* do not have any science or science communication degrees, they try their best to make sense of scientific research and results and rewrite them for general audiences.[130] However, some of the articles are written by people from the scientific community in order to add variety to *Krungthepthurakit*'s columns. Regardless of the scientific background or lack thereof of the author, the main goal of the author (and of journalists more broadly) is to make the stories interesting by showing that the content of the news has close connection to their readers' lives and that the information can potentially be applied to their lives. For example, some researchers found that shikimic acid could help reinforce the human immune system against flu.[131] Star anise, a spice and an important ingredient

[129] *Matichon*, Monday 27th November 2006, p.10
[130] *Somsakul Paojindamuk*, science editor: *Krungthepthurakit.* Interviewed by Chinnalong, 24th January 2012
[131] D Bradley. 2005. 'Star role for bacteria in controlling flu pandemic?', *Nature Reviews Drug Discovery,* vol. 4, pp. 945-946.

used in Thai soup [phalo], contains this acid. So here, the Journalists used 'phalo' in their news, which is a much more of a familiar thing to the non-scientific audience than 'shikimic acid.'[132] Hence, the readers could apply the research to their daily lives by consuming phalo. *Krungthepthurakit* also makes sure that some of the articles are written by members of the scientific community in order to have variety in their columns.

Next I will examine the coverage of science in these three newspapers which will reflect upon how the Thai newspapers judge the news value of science stories. I examined these three newspapers, a week publications of each newspaper. Before revealing the number of science articles in these newspapers, I will give an observation of science section and column in these newspapers. I found that although these newspapers have science-related sections, their names suggested that they focus on technology and gadgets rather than science. *Thairath* names its science-related column the 'witayakan' which means technology in Thai. The column presents primarily on computer, mobile, telecommunication stories and health-related stories. The 'witayakan' section occupies only a half-page of its broadsheet-sized newspaper which contains approximately eight articles. *Thairath* as a leading tabloid uses brash headlines and photographs of crimes and accident victims on its front page. It often presents folklore and supernatural stories on its front page. *Thairath*'s tabloid style appeals general readers who are unlikely to be higher- educated audience. Perhaps as a consequence, *Thairath* gives limited space to science-related stories which tend to focus on health which is easily connected to everyday life.

---

[132] *S. Paojindamuk*, Interviewed by Chinnalong, 24 January 2012

Matichon tends to offer more space for science-related stories than *Thairath.* Its weekly edition has a science-related section called 'online' which is as its title suggests, that it reports on technology, computers, and information technology rather than scientific content. The section takes up a whole broadsheet page, although it reflects that *Matichon* gives science-related stories more news values than *Thairath*. However, the 'online' section is located on page thirty-two which is the latter session of the newspaper which shows that *Matichon* weekly may have valued scientific-related stories to some extent but it is not its priority. *Matichon*'s Saturday edition offers a longer section of the 'online' section called the 'Life &Tech'. This section has four pages and is located in the middle of the newspaper; its content concerns mobile phones and gadget updates, computer games reviews, and computer programmes updates. The 'Life &Tech' section also has a column called 'Health Focus' that features health stories. Although, it seems that *Matichon* has relatively accommodated science-related stories compared to *Thairath*, *Matichon* does not employ science journalists but rather allocates its science section on journalists from other editorial desks, e.g. foreign, and education desks.[133] This in part explains why the technology section features so many foreign news stories with recent examples including the release of the latest Norton anti-virus product and the development of the iPhone4.[134]

Krungthepturakij seems to give science-related stories the highest news values among these three newspapers considering the space that it devoted to science section; especially from the late 20th to the early of the 21th century. *Krungthepthurakij* has

---

[133] Suranee Saengphen, a senior journalist at Quality of life desk, *Matichon*. Interviewed by Chinnalong, phone interview, 20 January 2012

[134] See for example *Matichon*, 'Norton Introduces 'Norton Safe Web', Free to Download.', 2013, <http://www.Matichon.co.th/news_detail.php?newsid=1365484668&grpid=&catid=09&subcatid=0904 > accessed 9 March 2015.

devoted eight pages to science and technology on a weekly basis. However, in 2007 due to the rising cost of paper, the science section was dropped to a single page on a daily basis. Moreover, *Krungthepthurakij* is the only newspaper among these three newspapers having a science desk and science editor. According to its science editor, Somsakul Paojindamuk, *Krungthepthurakit* has a policy of covering science and technology stories and has allocated sufficient space to science-related stories in the newspaper.[135] *Krunthepturakij* is different from *Thairath* and *Matichon* since it has its own science editorial desk and it had allocated a substantial space for science-related stories which is an outcome of its policy.

Thus far, I have established some picture on science coverage in the Thai newspapers; from my observations, the results suggest that science has been given more news value in the elite and business newspapers such as *Matichon* and *Krungthepturakij* than *Thairath* which is a sensational newspaper, drawing on the space given to science/ technology sections. While elite and business newspapers aim at the middle class with higher education, sensational newspapers target working class readers. However, all these three selected newspapers from three categories, sensational, elite, and business newspaper, share one similarity. The similarity is their science-related stories tend to focus on technology and gadgets update e.g. mobile phone, tablets, and computers, rather than science content or scientific research, although *Krunthepturakij* covered more scientific content and scientific research than the other two newspapers. Somsakul, science editor of *Krunthepturakij* commented that

[135] Somsakul Paojindamuk, science editor: *Krungthepthurakit*. Interviewed 24 January 2012

other newspapers chose to cover stories such as the latest mobile phone technology and computers, which usually attracts more advertising revenue.[136]

This is in agreement with a Master degree thesis, *New Source, Gatekeepers, News Content of Science and Technology in Daily Newspapers,* by Chanpen Thanomboon.[137] Chanpen examined the same three newspapers as I have (*Thairath*, *Matichon*, and *Krungthepturakij*) for a year (1997). Chanpen applied sampling rotation method and found that these three newspapers' science coverage focused on three main topics, with the large percentage 32.8 per cent covering computer and technology. Health science and agriculture accounted for 14.3 and 14.2 per cent of articles, respectively. Chanpen's finding agrees with my content observation that computer, gadgets, and technology were the most covered categories, although her result on the proportion of each category is greatly different to mine which is discussed further in the next section, where I explore the figures of science articles in these three newspapers. Another research paper presented at the seminar 'The media and the development of science' by the Faculty of Journalism, Thammasat University, found that the content of science coverage in the press focus on nutrition, health, and environment.[138] However, no attempt was made to quantify the categories of the science coverage which could have made the finding far more useful in this regard. Hence Chanpen's finding is more informative.

---

[136] S. Paojindamuk, science editor: *Krungthepthurakit*. Interviewed 24 January 2012

[137] Chanpen Thanomboon. 1997, *New Source, Gatekeepers, News Content of Science and Technology in Daily Newspapers*. Master degree thesis, Chulalongkorn University, 1997.

[138] Faculty of Journalism, Thammasat University. 'The media and the development of science', Proceeding at the media and the development of science seminar, Bangkok, Thammasat University, 2000.

As I have discussed in my methodology, electronic newspaper archive is limited in Thailand as well as manual newspaper archive. For the manual newspaper archive, newspapers were kept at the national library but without sorting system. Therefore, I have used the *Matichon* archive which is not the perfect archive but it is the best archive available. This is one of the main difficulties that I faced while conducting my thesis.

This section presents the quantitative data of science-related articles which were presented in each of the selected newspapers. Therefore, I can build up some background on scientific information available for the Thai audience. Later on I demonstrate how much Science-Buddhism dialogue was presented in the newspapers. As I show in section 3.2, popular books have been a major arena for the Science-Buddhism dialogue since they have space for detailed explanations, but this is unlikely to be the case for newspaper. Newspapers have limited space along with assigned pages for each column. Therefore newspapers are unlikely to be a suitable medium for elaborating on detail or discussion.

In order to determine the coverage of the Science-Buddhism dialogue in newspapers, I examine the science coverage in the three selected newspapers. Thus to be able to judge the news value each newspaper allocates to science, I will determine the percentage of science-related stories to the overall content. From my thorough observation of these newspapers, I found that Thai newspapers have firm templates for their news and columns so each issue has almost the same structure. Thus I counted news reports and articles in each newspaper for a week and determined an average daily figure of news and articles that each newspaper presented. The following items were not counted as news reporting or articles: stock market listings, advertisements, and funeral notices. My scheme of determining the science coverage was done by

consulting the approach that has been developed by other researchers.[139] The number of science stories in a daily issue will be given as yearly figures since my research aims to establish a yearly trend of science coverage.

The result is as follows: *Thairath* presents approximately 130 articles per daily issue, while *Matichon* covers 160 articles and *Krungthepturakij* presents 120 articles per issue. *Thairath* and *Krungthepturakij* have similar figure of articles present in each of their issues while *Matichon*'s article figure is higher than the other two newspapers. However, when considering the number of pages contained in each issue, I found that *Krungthepturakij* contains the highest page figure of four pages per issue. The columns' sizes need to be taken into account when determining how much science stories were covered in the prints. However, the science coverage in newspapers is not my thesis's main theme; my attempt is to establish a reliable background data for analysing the newsworthiness of the Science-Buddhism dialogue in Thai newspapers. I considered that conducting the research on the square inch of the science articles would take up too much of my research time and it is unnecessary for what I am aiming to answer in my thesis. The number of overall science content that I am presenting must be interpreted with caution since it is a survey for approximate guideline. In summary, for one year *Thairath* provides 47,000 articles, *Krungthepturakij* covers around 44,000 articles per year which is the lowest figure among the three newspapers while *Matichon* have the highest number of articles per issue, it contains approximately 58,000 articles per years. It is noted that the difference in the number of articles in each newspapers could reflect upon its length of each articles.

---

[139] M G. Pellechia, 'Trends In Science Coverage: A Content Analysis Of Three US Newspapers', *Public Understanding of Science*, vol. 6, 1997, pp. 49-68 <http://dx.doi.org/10.1088/0963-6625/6/1/004>.

Next, I explored the newsworthiness of the science-related articles in newspapers. I searched the *Matichon* archive using four searching terms reflecting four area of science: science, technology, health and environment. The length of searching is the earliest year that the archive is available, from the 1996-2010. The data is in Table 2.1, which is the number of science news reports and articles that each newspaper covered each year. Then, the results were analysed in percentage terms and is shown in the graph in figure 2.1.

Table 2.1 The number of science news reports covered by year in three Thai newspapers

Year	*Thairath* Total science articles	*Thairath* Percentage of science articles as % of all articles	*Krung.* Total science articles	*Krung.* Percentage of science articles as % of all articles	*Matichon* Total science articles	*Matichon* Percentage of science articles as % of all articles
1996	2	0.004	12	0.02	51	0.08
1997	73	0.15	331	0.7	530	0.91
1998	172	0.36	514	1.17	647	1.11
1999	199	0.42	795	1.8	868	1.49
2000	171	0.36	490	1.11	946	1.63
2001	212	0.45	672	1.53	1226	2.11
2002	281	0.6	1174	2.67	1606	2.76
2003	447	0.95	1087	2.47	1837	3.16
2004	364	0.77	1532	3.48	2137	3.68
2005	815	1.73	1891	4.29	2001	3.45
2006	714	1.52	1572	3.57	1833	3.16
2007	918	1.95	1933	4.39	2381	4.11
2008	1168	2.49	1697	3.86	2194	3.78
2009	1286	2.74	1800	4.09	2654	4.58
2010	1220	2.59	1726	3.92	2693	4.64
2011	1286	2.74	1222	2.77	2253	3.88
2012	1285	2.73	1670	3.79	2446	4.21
2013	1165	2.47	1558	3.54	2390	4.12

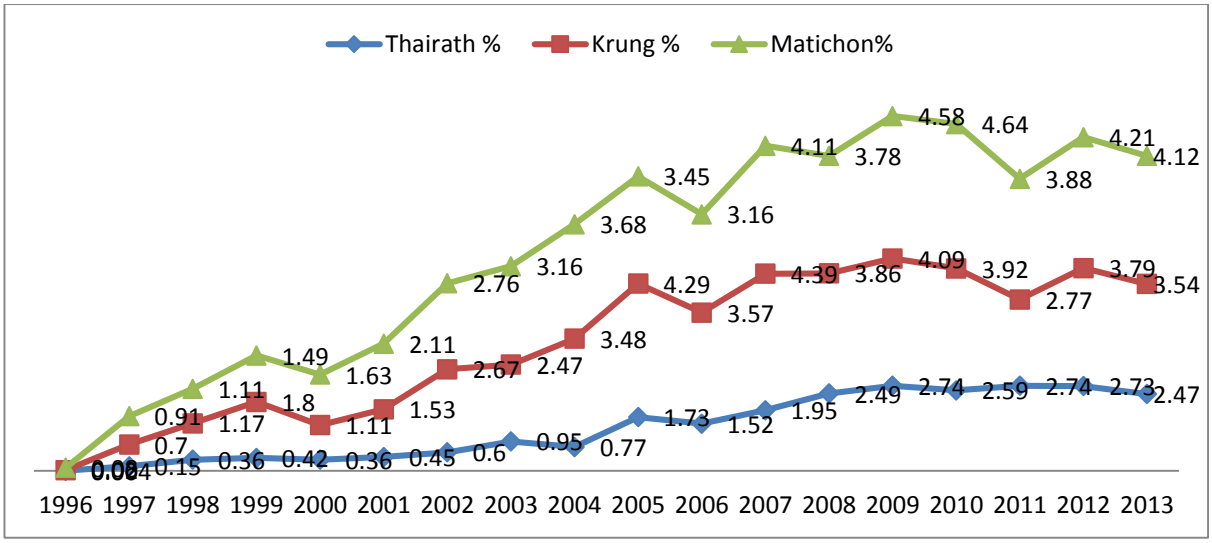

Figure 2.1 Coverage percentages in three select Thai newspapers

Overall, the result shows that science-related articles and news reports represent only a small percentage of the total number of articles in these three newspapers. The coverage has steadily increased over time. *Thairath*'s coverage was under 2.5 percent of its overall content. Its coverage was less than 1 percent before the 2005s. *Matichon* and *Krungthepturakij* have higher science coverage than *Thairath*, although less than 5 percent of their total content. The increased coverage could have been in response to a rise of the public's interest in science. *Matichon* had the highest coverage among the three newspapers, approximately 3-4.5% of the total articles reflecting its policy as a quality newspaper. Similarly, *Krungthepturakij*'s science coverage was in the range of 2.5-4% of the total content. The smallest percentage of science coverage in *Thairath* reflects its standpoint as a sensational newspaper which addresses lower middle-class public.

My survey differs from those of Chanpen's, which found that *Matichon* covered science article is 37.9 per cent of its total content while *Krungthepturakij* and *Thairath*

covered science at the percentage of 36.8 and 25.1, respectively.[140] My survey seems to be consistent with the earlier research undertaken by the Faculty of Journalism, Thammasat University, which found that *Thairath* covered science at 1.98 per cent of its overall content while *Matichon* presented science as low as 1.5 per cent. These findings' samplings differ, the previous examined three newspapers for a year in 1997 while the latter research collected data from January-October in 1987. The science coverage percentage that Chanpen revealed seems to be surprisingly high and significantly different from the research by Thammasat University and my results. However, as there is no other relevant research available to compare with I will compare these results with some international findings. Pellechia conducted a content analysis of three major American daily newspapers, the *New York Times*, the *Chicago Tribunes*, and the *Washington Post*, over three decades.[141] She found that the science coverage in these newspapers had a small percentage of the total articles printed from 1986-1990, science was presented 2.04 per cent which increased from the earlier period (1976-1980) when science coverage percentage was 1.22. Surprisingly, the science coverage in three major US newspapers is lower than Chanpen's result in great scale.

A more recent research by Bucchi and Mazzolini (2003) analysed science coverage in an Italian newspaper, Il Corriere della Sera, from 1946-1997. The research reveals that the percentage of science articles increased over the period of time, from 0.7 per cent in the period 1946-1950 to 28.6 per cent in the period 1991-1997. Although, the Il Corriere della Serae's science coverage in the period 1946-1950 is large at 28.6%, however, the figure is still lower than Chanpen's finding. From comparing these findings,

---

[140] Chanpen Thanomboon, 'New Source, Gatekeepers, News Content of Science and Technology in Daily Newspapers' (unpublished Master, Chulalongkorn University, 1997).
[141] Pellechia. 1997

I found that it is likely that these surveys give the definitions of science content differently which demonstrating in their results. Another factor is the differences in sample technique, for example, Chanpen's period of analysis was one year but she applied the sampling rotation methodology which simply means that she did not collect her data from every issue of her three selected newspapers in one year. Chanpen revealed that by applying the research methodology, 46 issues of each newspaper published in one year were selected. On the contrary, Pellechia, Bucchi and Mazzolini studies were conducted by collecting the data from every issue of their choices of newspapers within their studies period.

2.3.3 Television

Television is the media most consumed in Thailand; a person's average time spent watching television is 2.7 hours, watching videos 2.5 hours, listening to the radio 1.6 hours, and reading 1 hour per day.[142] There are six television channels in Thailand: 3, 5, 7, 9, 11, and Thai TV. These are free TV channel*ฆ* as there is no TV license fee. However, there are also other paid channels which often broadcast foreign channels.

Free TV, it is worth noting, is relatively the most expensive media for an agency to sponsor in comparison to the cost of museum exhibitions because television programmes have a very short life. However, it has the highest consumption compared to other media since it reaches almost every Thai household in both urban and rural areas.

[142] Data from the National Statistic Organization, http://service.nso.go.th/nso/nsopublish/themes/files/useTime52FN.pdf, accessed 24th July 2014

2.3.4 Pantip online forum

Pantip discussion forum was selected to be my case study because it is one of the earliest established Thai websites and online discussion forum that survives until the present; it was established in 1996. Pantip forum is a popular discussion forum with one million users and seven million page views per day.[143] It positions itself to be 'online community'. Wanchad Padungrad, Pantip's establisher remarks that 'Facebook is for talking with friend but Pantip is for talking to the public'.[144]

Pantip is well-known for its discussion board which is divided into thirty two forums called 'café'. Each cafe has its topic of discussion, for instance, ‘Chai-ka (home) café’ aims for discussion regarding home decoration, and home building while ‘konkrua café’ is designated for discussion on kitchen-related topics. My focus will be at two cafes, ‘Wahkor café’ which is designed for discussing science-related topics and ‘Sadsana café’ which is for discussing religion-related topics. Thai language is the only language used in Pantip reflecting that the majority, if not all, of Pantip viewers are Thai. Pantip opens freely for all the Internet surfers to read its posts, however, posting or commenting require membership registration. The membership registration requires proof of identification with ID numbers. However, these members post on threads or comment with their nicknames while their identifications are stored by Pantip’s forum administrators. However, some users may hide their nicknames if they wish. This is the case in some of the posts that I will analyse later.

---

[143] *The Dailynews* newspaper (online version), 11 Feb. 2013, http://www.dailynews.co.th/technology/183705 accessed 22 August 2013.

[144] *The Manageronline*, 6 February 2013 http://www.manager.co.th/cyberbiz/viewnews.aspx?NewsID=9560000015771, accessed 22 August 2013.

Pantip forum has 700,000 registered members. It has an average of 5,000 new threads with at least 75,000 new posts per day.[145] There is no restriction on the length of each post or thread, therefore I found a number of lengthy posts which often are criticised by the discussants that they are too long or too difficult to read; some discussants would say 'too long I did not read'. Pantip members can report the threads which they found inappropriate to the moderators who will consider deleting the post or banning the member involved.

2.4 Conclusion

I have shown the development of science in Thailand, briefly I discussed the historical background far back to the nineteenth century when the Western science arrived and how the Siamese elites had to come to terms with it. The development of science in Thailand could perhaps be characterised as competing with the rationalisation of Buddhism, although in the contemporary these two entities seem to be separated. I then emphasised the two major parties in the science communication landscape, the government and the middle-class Thai. On the government's side, I conducted a critical review of science communication policies and the science organizations. The Thai government's science policies and practices are based on adopting the West's models and practices may have caused a counter reaction from the public. Although this should be read with caution, however, as the Thai middle class's interest in Science-Buddhism dialogue and admiration for Einstein could be understood as a reaction to the government's practice of following the Western model of science development.

[145] Inverview of Wanchad Padungrad, the Pantip's establisher published in Thumsup news website http://thumbsup.in.th/2013/12/pantip-17-years/ accessed 24th June 2014.

I then provide an analysis of the media outlet background, focusing on popular books, newspapers and the Pantip discussion forum. I conducted a survey on the science content in Thai newspapers since there is a constraint on the data; the data is necessary for my thesis since one of my main arguments is Einstein's high profile in Thai popular accounts. In order to determine the profile, I need the data on the coverage of scientific content in the newspapers to act as my baseline to compare with the coverage of Einstein.

Chapter 3

The Significant Role of the Science-Buddhism Dialogue in Science Communication Thai Landscape.

This chapter aims to demonstrate how the Science-Buddhism dialogue plays a prominent role in science communication in the Thai landscape. My argument is that the Science-Buddhism dialogue is a theme of significant interest to the middle-class public, this interest became a vital challenge for the government in communicating science. Furthermore, I argue that the substantial interest in Science-Buddhism dialogue is a challenge to science communication, as it causes inevitable tension between the government, trying to play a major role in communicating science and their target audience, the middle-class public. The tension has developed from the disparity between the government's aims in focusing mostly on economic science with the middle-class's significant interest in contemplative science.

My argument draws on a sample of popular books, selected newspapers and the popular discussion web board, Pantip. Print is my main data source because it has been a significant arena for dialogue between science and Buddhism in Thailand since the late nineteenth century. Although print media has been the primary source for science and Buddhism discussion, particularly in popular books, recently the Internet has become another important platform for the Science-Buddhism dialogue. My preliminary research found that Pantip's discussion forum is an outlet that vividly discussed the Science-Buddhism dialogue. However, its threads on the dialogue often refer to the popular *Einstein Phop Phraputtachao Hen [Einstein Found the Buddha Had Seen]*. It is a confirmation that the book is well recognized by the middle-class public. The book is not

only striking in the light of its extraordinary sales, but it also stimulated the discussions regarding Science-Buddhism discourse in other media. Another media source I reference in my research on the subject of the Science-Buddhism dialogue are Thai newspapers; however they tend to be the least among the three media sources that offer discussions on the science and Buddhism dialogue.

My thesis is focusing on the contemporary dialogue of science and Buddhism, however, the dialogue is not a recent phenomenon. It can be traced back to the late nineteenth century when the first discussion of Science-Buddhism arose in *Bangkok Recorder* newspaper; the debate in the newspaper later lead to a book, *Kitchanukit* (1867) published and written by Thippakorrawong who was also the main participant in the debate. The late nineteenth century was an important period in Thai history as it was the period of modernization when modern knowledge interacted with the traditions**.** *Kitchanukit* is not only significant as the first book that opens a dialogue on science and Buddhism in Thailand. Its recognition remains current because it is applauded and listed in the '88 good science books', an outcome of the research conducted in 2001 and funded by the Thailand Research Fund, the government's main agency to support research.[146] The list of '88 good science books' recommended a few popular science books on Science-Buddhism dialogue which they deemed were 'dee [good]' for the general public to read. Moreover, the themes discussed in *Kitchanukit* recur in the contemporary books on science Buddhism dialogue; I examine these themes in this chapter.

[146] The research was published in Chaiwat Khuppatrakul and colleagues, *The Review of 88 good science books.* Bangkok, Doublenine Press, 2002

My narrative herein follows from the historical perspective to the present. That is, in order to understand the phenomenon and contexts, I emphasise the development of Science-Buddhism dialogue from its inception up until recent discussions. The data I present shows the trend of publication and I also analyse the historical contexts to understand the trend. The main features of the books are analysed to show their themes; and I examine the changes in the Science-Buddhism dialogue themes between decades. The analysis here links to Chapter 4 which demonstrates how these science Buddhism dialogue themes changed after the 1990s. The Science-Buddhism dialogue theme shifted to focus more on Einstein after the 1990s; I investigate the contexts which encouraged the shift. I am particularly focusing on how Einstein is referred to, and when he was first mentioned in these books.

3.1 The Science-Buddhism dialogue in popular books

3.1.1 A critical overview of books on the Science-Buddhism dialogue

To demonstrate Thailand's middle class interest in the Science-Buddhism dialogue from popular books, I present a survey of the Science-Buddhism dialogue books trend from the first book, *Kitchanukit*, published in 1867 to books published in the first decade of the twentieth-first century. The *Kitchanukit* is one of a few popular books on Science-Buddhism dialogue from the '88 good science books recommendation' list which was praised by the Thai government.[147] Although it was written nearly a hundred and fifty years ago, *Kitchanukit* is still appreciated by more recent scientific researchers

[147] The other two books on science-Buddhism dialogue which are in the 'the review of 88 good science books' list are P.A. Payutto. *Phuttasatsana nai Tana Pen Raktan Khong Wittayasat [Buddhism as Science's Foundation*], Bangkok, 1992 and Kukrit Pramoj, *Huang mahannop [The Wheel of Life],* Phra Nakhon, Khaona, 1958.

and commended as a 'good popular science book'. The following graph shows the overview figure of the Science-Buddhism books that were published in each decade from the late nineteenth to the twentieth-first century.

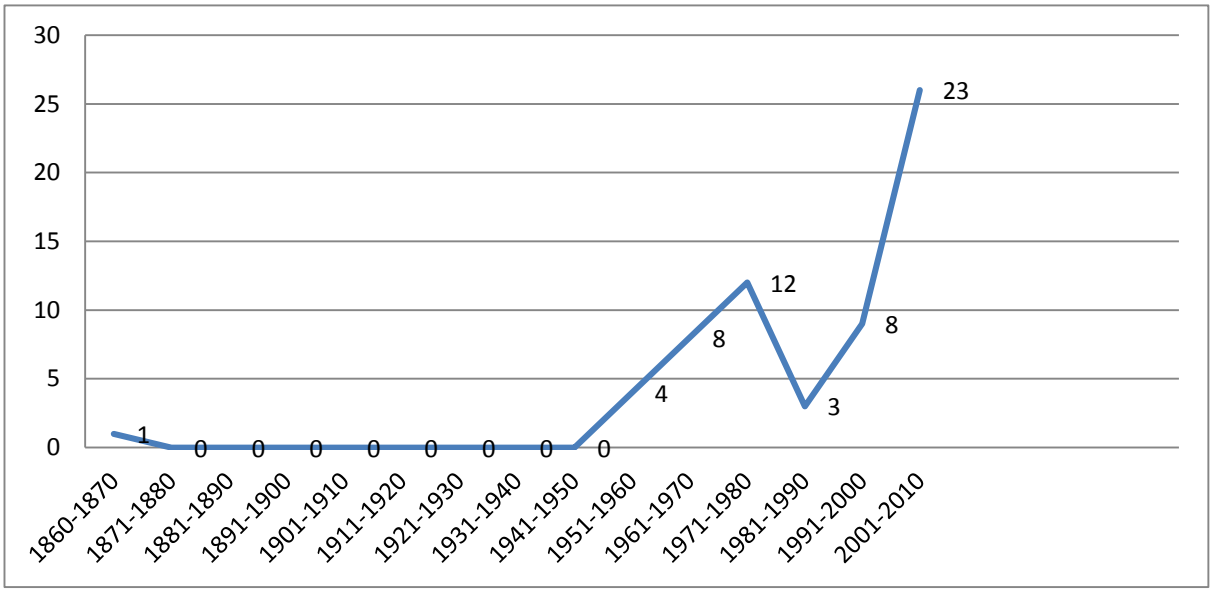

Figure 3.1: Graph showing historical trends of Science-Buddhism dialogue book publication from 1860s-2000.

The graph demonstrates the continual trend of Science-Buddhism dialogue books published from the 1950s onwards. However, it was not the case earlier for nearly a hundred years, from the 1860s to 1940s, there were no Science-Buddhism dialogue book on the market. The figures of Science-Buddhism dialogue books gradually rose beginning in the 1950s; four Science-Buddhism dialogue books were published after a long period of absence. Between the 1950s and the 1980s, publications gradually increased from four to twelve books. Although the figure was small these books were recurrently published through the forty-year period. From 1980 through 1990, the total figure of the books went down for the first time from eleven to three books, however began to increase again in the 1990s. At the beginning of the 1990s, the figure sharply rose from three in the 1980s to nine Science-Buddhism dialogue books. By the 2000s,

the figure of the Science-Buddhism dialogue books had significantly risen, by the end of the decade, there were twenty-six books. The sharp increase of the Science-Buddhism books from the 1990s onward coincided with the rise of popular books on Einstein, this correlation is further investigated in Chapter 4. It was this decade that witnessed significant rise in both the number of the Science-Buddhism dialogue books being published and the phenomenal sale of *Einstein Phop Phraputtachao Hen [Einstein found, the Buddha Had Seen]*.[148]

From the overview and graph of the publication trend discussed above, Science-Buddhism dialogue was a theme of interest to the Thai readers in the popular books market. As I discussed in my Introduction chapter, the middle class is the target group of both the popular books market and the Thai government in science communication. This is proven given the Science-Buddhism dialogue books published regularly. The figure surge of the last decade (2000s) demonstrates the strong attention towards the Science-Buddhism theme.

Through a comparison of the figures of Science-Buddhism dialogue books in the Thai market and those in the international market, I determine the significant role of the Science-Buddhism dialogue theme internationally and especially in Thailand. I gathered this data from the WorldCat online catalogue, which contains the world's largest network of libraries. I also cross-examined my search results with the Amazon online bookstore to ensure that the search covers all the books regarding Science-Buddhism dialogue. My search parameters included the terms, 'science and Buddhism', 'Buddha and science', and 'new physics and science'. I refined the search to include only books

[148] S Sujira, 2007

published in English, as the initial result came up with varieties of language and forms not relevant to my research. Moreover, I reviewed the results carefully by making sure each book in my list was focused on Science-Buddhism dialogue since the search result yielded a variety of books not restricted to the Science-Buddhism dialogue. Therefore, I examined the books' brief descriptions, which the WorldCat provides, to ensure that each book's concentration was on Science-Buddhism dialogue before a final assessment of the figures of the Science-Buddhism dialogue books on the international market.

The results show that there are sixty popular books on the Science-Buddhism dialogue published in the English language. These books concern a few Buddhist schools, e.g. Burmese Theravada, Tibetan Buddhism and Zen Buddhism. The first Thai book on the subject was published in the 1860s, four decades earlier than any other Science-Buddhism dialogue book published in the international market. The comparison between the figures of publications on Science-Buddhism dialogue in Thai and international market is shown in Figure 3.2.

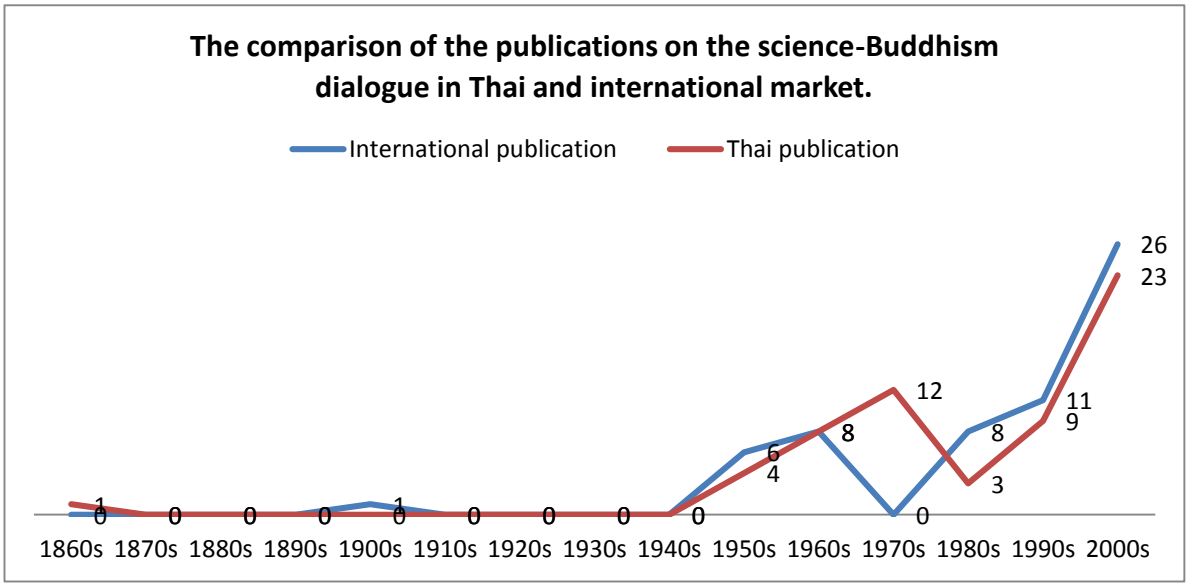

Figure 3.2: Graph showing Science-Buddhism publication comparisons of Thai and International markets

The international trend is similar to the Thai trend, although, the trend of the markets tends to overlap each other. The Thai publication trend is likely to follow the international trend by a decade. Although, the Thai book on the Science-Buddhism dialogue was published earlier than the international market, in the 1860s and 1900s respectively. The publication in both markets began to increase in the 1950s, up until the 1970s where a significant difference between these two markets can be seen. The Thai market reached its peak after a gradual increase, while the international market's publication plunged from eight publications to none. Later, the Thai market dropped dramatically in the 1980s. The overall figures of the publications between international and Thai markets are identical with the figure of sixty books on the Science-Buddhism. The exact figures of the overall publications between Thai and International markets are striking since the international market is larger than the Thai market. Moreover, I determined these statistics of the international publications by including the Science-Buddhism dialogue books which were published in English language but were printed or written by non-English authors. I expected the international figures to be significantly greater than the Thai market alone since most of the markets I researched have a majority Buddhist population, e.g. Burma, Japan, and Sri Lanka. Interestingly, although the Thai book market, including Thai language books, is smaller than the English language market, the figure of the Science-Buddhism books in Thai market were equal to the international market. This discovery is convincing support to my main argument that the Science-Buddhism dialogue is a prominent theme in Thai book market.

The contextual analysis of the Science-Buddhism dialogue books publishing

This section specifically examines the context of the Science-Buddhism dialogue in the popular books publish between the 1950s-2000s. As shown in Figure 3.1, only one book on the Science-Buddhism dialogue, *Kitchanukit (A book explaining many things)* (1867), was published in the 1860s. The book was written and published under the fear of colonialism and was an attempt to come to terms with the West by employing the Buddhist tradition to demonstrate the strength of the country. However, such an attempt was conducted by rationalising the orthodox Buddhist teaching at the same time, as discussed in Chapter 2.

The publishing of *Kitchanukit* was driven by political and cultural agendas by the elites; at the time, the book market was very small. The book sale was not the first priority of publishing the book. That explains why there was no book on the Science-Buddhism dialogue being published after *Kitchanukit*. There are two key factors that I will consider: the trend of the publication was an outcome of the political and social circumstances, the Science-Buddhism dialogue was a practice led by the elites, as it is a theme of interest to the upper and middle class.

In the 1950s, Science-Buddhism dialogue books reappeared on the market again after a long absence of eight decades. Science-Buddhism dialogue books made a comeback, and the theme has been growing ever since as shown by the steadily rising figures of books. The first decade of the comeback there were four books and the figure rose to eight and eleven books in the 1960s and 1970s, respectively. After such a long absence of the Science-Buddhism dialogue theme from the book market, it is interesting to examine the context of why the theme re-emerged again in the 1950s. I consider two

main factors that played a significant role in this re-emergence. First, the popular market grew in popularity as a consequence of the education being fully systematized and the tertiary level of education being opened to the middle class in the 1950s.[149] By the mid-twentieth century, the education system was fully expanded to commoners; a literate and reading public emerged with increased access to education and relatedly increased literacy led to the growth in readership.[150] The book market was further expanded as education provision was extended to include the commoners, therefore it could have been a good opportunity for authors and publishers to publish the Science-Buddhism dialogue books. In the 1960s the number of universities in Thailand rapidly expanded from 5 to 17 in a period of only ten years (1961-1972).[151] The higher education student enrolment increased dramatically from 15,000 to 100,000.[152] Strikingly, this was the first time that some 'small-town lower middle class' students entered the higher education level.[153] The expansion of education from foundation to tertiary level motivated the

[149] The compulsory primary education law was enacted in King Rama VI reign (1910-1925), requiring both boys and girls to attend school. Girls who did not have opportunity to attend monastery schools could attend primary school. Women, not close to the palace, could now also gain access to education and learn how to read and write. The statistics of girls attending school in Siam increased significantly from 5396 girls in 1915 to 235,465 girls by 1925. The number of enrolments drastically increased at the primary level. The majority were located in Bangkok. As the number of literate females rapidly grew, the women's publication market boomed. There were eleven women's periodicals launched between 1922 and 1931. This seems to be the first time that education was brought to the wider public, resulting in a condensing of social difference and class. However, beyond the primary level, education was still restricted to the elites and boys. The low literacy rate which made the book market very small as a consequence remained the case until the mid-twentieth century. The information from David K. Wyatt, *The Politics of Reform in Thailand: education in the Reign of King Chulalongkorn,* New Haven, CT: Yale University, 1969.

[150] The committee of Thai printing history, 2005. Siam. Pimpakan: Prawatsat Kanpin Nai Pratetthat [Siam Pimpakan: History of printing in Thailand]. Bangkok, Matichon.

[151] Before the 1960s, Thailand had very few universities; Chulalongkorn University was the first Thai university, founded in 1916 and Thammasat University was the second, established in 1934. After the 1960s, some new universities were established outside the capital, in the northern, north-eastern and southern parts of the country.

[152] Pongpichit and Baker, p. 301.

[153] Citing B Anderson and Mendiones, pp. 41-420 in Pasuk and Baker, p. 301.

growth of the book market; consequently, the Science-Buddhism dialogue book market started to grow.

The second factor to play a strong role in the re-emergence of Science-Buddhism books in the 1950s is the strong influence of American culture in Thailand. While, as discussed in Chapter 2, Thailand was one of the countries that the USA dominated both politically and economically, there were also many public movements in Thailand against the USA.[154] One of the most important projects launched by US which may well have been a motive for the return of the Science-Buddhism dialogue book theme, was the 'Seriphap' project. The project translated and published a number of popular science books, and reduced the prices of these books, said to be 'as cheap as a glass of soft drink.'[155] The return of the Science-Buddhism dialogue genre in Thai publishing could be interpreted as a counter action to the 'Seriphap' project publicising American popular science books in the Thai market. The Seriphap project is further explored in Chapter 4.

Further examination of some books on the Science-Buddhism dialogue, written to counteract the Seriphap project, show that the authors stated clearly that their books were written as an alternative to the American books. The first book published in the re-emergence period, *Phutthatham Kap Witthayasat (Buddha Dhamma and Science),* written by Yong Huntrakul and published in 1954, was written bilingually, in English and Thai. Yong states in his foreword that his book was written for foreign readers who are interested in Buddhism; to demonstrate the harmony between science and Buddhism.[156] Westerners, not Thai, are his primary target. I found this approach of

---

[154] Prajuk Kongkirati, www.midnightuniv.org/midarticle/newpage42.html, [accessed 10 Feb 2013].
[155] The information from the Duangkamol bookstore website. http://www.thaidk.com/usis.html, [accessed 10 September 2011].
[156] Huntrakul, p.2

writing for Westerners is unusual for a Thai author publishing in Thailand. However, under the circumstances at that time, of American power and Thai political unrest after the shift to the constitutional monarchy in 1932, the argument on the compatibility between science and Buddhism could be a method of comforting the public and enhancing nationalism since these books were written in the period that the American had strong power over Thailand.

Other strong examples of more nationalistic Science-Buddhism dialogue books are *Waen Song Chakkawan* (Revelation of the Universe Secret) and *Wichai Phutthasatsana Priapthiap Kap Lak Witthayasat [Buddhist Philosophy as Compared to The law of Science]* both written by Chalo U-tukkapad in 1959 and 1969, respectively.[157] Chalo states his main aim to defend Buddhism against the attacks from Westerners. Chalo expresses 'some American scholars criticised Buddhist teaching of causing Thailand to be underdeveloped'.[158] He adds that an American doctor commented that Buddhist meditation provokes mental illness among practitioners; in addition, some foreign radio programmes criticised Buddhism for teaching Buddhists to worship the supernatural.

According to Chalo, these misunderstandings encouraged him to write the books. Another claim Chalo made is that he was encouraged to write by Mr. Pickering who was the former director of the USIS (Asian region), the organization which launched the book project translating some American popular books to Thai.[159] According to

---

[157] Chalo U-tukkapad, Waen Song Chakkawan (Revelation of the Universe Secret), Phra nakhon, 1959. And Chalo U-tukkapad, Wichai Phutthasatsana Priapthiap Kap Lak Witthayasat [Buddhist Philosophy as Compared to The law of Science], Phra Nakhon, 1969.

[158] Chalo U-tokkapat, 1969, p.238

[159] U-tokkapat, 1969. pp. 231-233

Chalo's statement, Mr. Pickering was concerned with American scientists, professors, and atheist high-ranking public servants, who as I quoted Chalo 'might easily accepting communism ideology.' Chalo argued that he could persuade these people to become Buddhists, which might prevent them from converting to communism. It is noted that at the time, the worry of communism was substantial, one of the main reasons that the US had given aid to Thailand as protection from communism.[160] It may be understood that these author's appealed to Americans who admired the benefits of Buddhism. These three books are examples to support my argument that the return of the Science-Buddhism dialogue genre books were the consequence of the American power in the country.

As shown in figure 3.2, Science-Buddhism dialogue books dropped in the 1980s, although it was the period that Thailand had established the 'National Science Day' to be held annually on the eighteenth of August that was later changed to the 'National Science Week'. At the same time, Thailand honoured King Mongkut (1851-1868) as 'the Thai father of science' to celebrate his outstanding achievements and interest in modern science.[161] The contrast between the science activities led by scientists and the low figure of Science-Buddhism dialogue book publishing perhaps reflects the conflicting motivations and interests between the middle class public and the Thai scientific community. Though, as mentioned earlier, Science-Buddhism dialogue was a theme of interest to the middle class public, and Thai scientists and scientific authorities

[160] Surachart Bamrungsuk. 1988. United States Foreign Policy and Thai Military Rule: 1947-1977, D.K. Book House: Thailand, p. 45

[161] Yongyut Yuttawong edit. *The Thai Science and Technology: From the past to the Present*, Bangkok, National Science and Technology Development Agency (NSTDA), 2000), p. 24.

attempted to raise the profile of Thai science their view held that Buddhism was an entity that should be kept separate from science.

It is difficult to determine the reasons at the time for low figures of the same genre books published earlier. However, there is no document, in neither academic nor media accounts to explain the public response to these books. Not all the genre books published in the 1950s-1970 record the number of copies published. The various library archives' search results seemed to show that genre books were published only once. Another possibility in the drop of the genre books may be as a consequence of the political turmoil in Thailand, which at the time was ruled by military dictator, Thanom Kittikachorn from 1963-1973. More importantly, there were two major political protests in 1973 and 1976.[162]

After the publishing of the Science-Buddhism dialogue books decreased in the 1980s, the figures rose again in the next decade, the 1990s, and the number rapidly increased in the 2000s. The figure 3.1 shows the list of thirty-one books on the Science-Buddhism dialogue, published in the two decades (1990s-2000s). The figures are significantly higher than all the Science-Buddhism dialogue books previously published. The proliferation of the theme is remarkable when comparing the 1990s-2000s publication figures with the earlier figures from the 1860s-1980s. In the hundred and thirty year period, there were only twenty-eight books published on the Science-

[162] There was the protest in 1973, when more than 500,000 people joined the protest. The protest led to a violent clash between the students and the police and the military. At the end of the protest, the Prime Minisiter, Thanom Kittikachorn, resigned and went into exile. In 1976, another bloody political violence occurred when Thanom returned to the country and outraged the students protest, some students were charged with lèse majesté. The result was a massacre, a number of students were killed at Thammasat University; some survivors fled the country to study in Europe and America while some student leaders joined the communist party in the forest.

Buddhism theme. Moreover, the first decade of the twentieth-first century alone witnessed the rapid rise of the Science-Buddhism dialogue publication as twenty-five books were published.

More importantly, as mentioned, is the phenomenon of the sale of *Einstein Pop Phraputtachao Hen [Einstein found, Buddha had seen].* The book was published more than sixty times, which is extraordinary for a popular book in the Thai market, particularly in comparison to other genres such as: comic, graphic novel, health, cooking, and biography.[163] The title of *Einstein Pop Phraputtachao Hen* obviously suggests the content deals with science and Buddhism, and despite the title's reference to such complicated topics the book sold very well. According to the phenomenal sale of this particular book and the publishing figures of the genre books rapid increase there is evidence of a strong interest in the Science-Buddhism dialogue.

There were exterior and domestic factors that motivated the proliferation of the Science-Buddhism dialogue books in the last two decades, particularly the first decade of the twentieth century. First, the exterior factors to be considered were the increasing sales figures of books on Einstein in Thailand, which were to some extent a consequence of the international celebration of Einstein. The Thai government responded to the world celebration of Einstein in a few ways, for example the Ministry of Science launched a project in 2005 to celebrate Einstein's centenary. Outcomes of the project included many pieces on Einstein created across multiple media platforms and this, to a certain extent, was a contributing factor in Einstein's popularity in Thailand.[164] Second, the

---

[163] The Publishers and Booksellers Association of Thailand, *A survey of the middle-class's reading and buying book behavior.* https://drive.google.com/file/d/0B2VTRflS5U4mTzhNSG9oalVzd0k/view, 2015 [accessed 2 March 2015].

[164] http://www.most.go.th/einstein/activity_name.htm [accessed 27 November 2011].

interior factors of the rise of interest in the Science-Buddhism dialogue were partially a consequence of the enlarged book market, as the chained bookstores expanded their stores to the provinces in the countryside. The number of bookstores significantly increased from under 1,000 bookstores in 2006 to 3,000 bookstores in 2009.[165] Nowadays, bookstores seem to be reaching out to customers in smaller provinces. Therefore, customers have easier access to books and more choices on which to spend their money. I also found the period that the Science-Buddhism dialogue publication proliferated was the same period that the middle-class Thai were also showing strong interest in Buddhism/ Dhamma books. Some popular books on Buddhism were listed in the top-ten bestselling books, and it was in 2008 that the first Dhamma books were listed. Although the bestselling lists are frequently occupied by novels and comics, the Dhamma books stayed on the top-ten list off and on between the years of 2008-2010. The two leading titles were *Thamma Tid Peak [Conveying Dhamma with Wings]* by V. Vachiramedhi and *Khaem Thit Chewit [Compass of Life]* by Thitinat Na Pattalung.[166]

These books explained Buddhist teachings by connecting them to the modern lifestyle, an approach that made them more appealing to the general public. The authors applied Dhamma to everyday situations and illustrated how Dhamma can solve one's problems. These books were seen to be a 'turning point' for Buddhist books, which previously had been written in a traditional and somewhat inaccessible style. Vachirametee argued that traditional Buddhist books often used 'Phasa Wat' or Pali/ Sanskrit language, commonly used in Buddhist canons; these languages are not used in

[165] The Publishers and Booksellers Association of Thailand, The Review of Publishing and Book Business in Thailand: 2009 (unpublished document).
[166] V. Vachirametee. 2004. *Thamma Tid Peak [Conveying Dhamma with Wings]*. Bangkok, Amarin. Thitinat Na Pattalung. 2004. *Khaem Thit Chewit [Compass of Life]*, Bangkok, Asom Saranat.

everyday life for Thai.[167] Therefore, the canons are difficult for Thai to understand. Vachirametee made a notable attempt to avoid using such language, especially Pali, and instead simplified the content. Therefore, the popularity of such Buddhist books can be said to have had some impact on the popularity of Science-Buddhism books.

Despite these exterior and interior factors influencing the proliferation of the Science-Buddhism dialogue, it was primarily the focus on Einstein in the first decade of the twentieth-first century that, I argue, was the key factor for the increase in the theme's popularity. It was the popular account of Einstein in Thailand with the concentration on his association with Buddhism which led to the practice of indigenizing him embarked by the print media, a topic I elaborate upon in Chapter 5.

3.1.2 The content in the Science-Buddhism dialogue books

This section examines the key themes in the books on the Science-Buddhism dialogue. To demonstrate the shift of the key themes, this section is divided into two sub-sections chronologically. The first section investigates the core themes of the popular books published from 1950s to 1980s. The second section, examines the popular books' core themes published from 1990s to 2000s.

[167] Anonymous. 'V. Vachiramethi: Dhamma Tong Tid Peak', an article available at *The Positioning Magazine,* July 2006, http://www.positioningmag.com/magazine/details.aspx?id=50164 [accessed 10 April 2015].

The core themes in the Science-Buddhism dialogue books published between the 1950s-1980s.

This section begins with the investigation of twenty-seven books published between the periods of 1950s-1980s (see Table 3.1 for list).

Table 3.1 List of twenty-seven books regarding the Science-Buddhism dialogue published between 1950s to 1980s.

1951 - 1960 (5)	1) Yong Huntrakul. 1954. *Phuttatam Kap Wittayasat (Buddha Dhamma and Science)*. 2) Kukrit Pramoj. 1958. *Huang Mahannop [The Wheel of Life].* 3) Chalo U-tukkapad. 1959. *Wan Song Jakkawan (Revelation of the Universe Secret).* 4) Thammasaro. 1960. *Phutthasatsana Yuk Paramanu*. [Buddhism in Nuclear Era]. 5) Prasan Thongphakdi. 1960. *Itthi Patihan [Supernatural]*.
1961 - 1970 (7)	1) Prachuap Phokkhasap. 1961. *Phutthasatsana kap witthayasat [Science and Buddhism].* 2) Sucheap Punyanupap. 1963. *Kunnalaksanapised Haeng Phutthasatsana [The true values of Buddhism].* 3) Manop Prasopphak, and Wiwitsurakan. 1967. *Witthayasat nai lakkhamson khong somdet phrasamma samphutthachao [Science in the Buddhist Teachings]*. 4) World Fellowship of Buddhists. 1967. *Chaloei Panha Thamma Samrap Yaowachon [Dhamma for the Youth]*.

	5) Porn Rattanasuwan. 1968, 1993. *Puttasatsana Kap Wittasat [Buddhism and Science]*. 6) Chalo U-tukkapad. 1969. *Wichai Phutthasatsana Priapthiap Kap Lak Wittayasat (Buddhist Philosophy as Compared to The law of Physics)*. Phranakhon: Phraepitthaya. 7) Samak Burawat. 1970. *Wittayasat Mai Lae Prasri-an* [New science and Buddha Maitreya]. Phranakhon: Phr*ae*phittaya.
1971 - 1980 (12)	1) Luang Doem Bang Boriban. 1971. *Laktam Tang Putthasatsana Priap Thissadee Tang Wittayasat [The comparison between Buddhism doctrine and scientific Theory]*. 2) Poon Kanjanarod. 1971. *Phutthasatsana Tae Ching Tam Lak Wittayasat. (Looking through the authentic Buddhism with scientific method)*. 3) Uai Ketsingha. 1971. *Wittayasat sueksa puttasatsana [Science studies Buddhism]*. 4) Phra Thepwisutthimethi. 1972. *Nua Witthayasat [Beyond Science].* 5) Yod Bonnak. 1972. *Thamma Kiao Khong Kap Wittayasat Yang Rai [What is the Connection between Buddhism and Science?].* 6) Phon Phalaphibun. 1974. *Nok Kamphaeng Wat (Outside the Wall of Wat)*. 7) Suphat Sukhonthaphirom Na Phatthalung. 1974. *Phutthapratya Prayuk [Applied Buddhist Philosophy]*.

	8) Thatsani Hongladarom. 1975. *Kamnoet rup nan chandai?: Kanpriapthiap Phraphutthaphot kap Witthayasat [The Comparison between the Buddha's Words and Science].* 9) Buddhadasa. 1979. *Thamma Khue Wittayasat [Dhamma is Science].* 10) Bunmi Methangkun. 1979. *Tiphae Saiyasat pen Witthayasat [The Superstitions could be Science*]. 11) Chaiyong Phromwong, and Dara Mekyai. 1979. *Phutthasat: Thritsadi lae Lakkan Thi Pen Huachai Khong Phutthasat*. Krungthep: Sam Charoen Phanit. 12) Chaisan Maiket, and Wirat Sarinthu. 1980. *Mong Winyan Nai Ngae Khong Witthayasat. [Look at the Soul from a Scientific Perspective].*
1981 - 1990 (3)	1) Egerton C. Baptist, trans. by Tin Ratkanok. 1982. *Praputtasatsana Kap Wittayasat (Supreme Science of the Buddha)*. 2) Wanet, trans. Fritjop Capra. 1984. *Tao Haeng Phisik (The Tao of Physics)*. 3) Aomara Malila. 1988. *Puttasatsana Kap Kwamcheu Tang Wittayasat [Buddhism and Scientific belief].*

The key themes of these books' are as follows:

- **Mind and Materialism concerns**

The differences between science and Buddhism is one of the main themes in the Science-Buddhism dialogue books. Buddhism concerns the mind while science concerns matter; however the mind is more important than matter. According to these claims,

science may be very advanced in its understanding of the material world but it has limited knowledge of the human mind. The discussions explain that the Buddha's teaching focuses on the means to overcome dukkha (suffering) and ignores the worldly matters because they are not necessary for overcoming dukkha. The following quotes are examples of aspects discussed in some of these books. Uai Ketsingha wrote, in *Wittayasat Sueksa Phuttasatsana [Understanding Science through Buddhism]* (1971), 'the advancement of science brought messiness and difficulties to human lives while the progress of Buddhism makes life easy and peaceful.'[168] In another book, *Phutthasatsana Tae Ching Tam Lak Wittayasat (Looking through the authentic Buddhism with scientific method),* author Poon warns, 'science is going on a wrong path; it may be advantage in term of material but backward regarding the understanding of mind.'[169] Yong, further states that the Buddha did not focus on material facts, for instance, on whether the world is flat or round and other materialist facts. Since these facts were unnecessary for living, the Buddha's main concern was to overcome suffering (dukkha) in life.[170] Sucheap argues, in *Kunnalaksanapised Haeng Phutthasatsana [The true values of Buddhism]* (1957), that science is the worldly knowledge while Buddhism is the mind knowledge. Moreover, Sucheap proposes that both science and Buddhism are based on contemplation, experimenting, and rationalisation and therefore are correlated. I found that Sucheap's book has the most neutral view towards science and, in fact, does not try to demonstrate the superiority in Buddhism over science.

---

[168] Uai Ketsingha. *Wittayasat Sueksa Phuttasatsana [Understanding Science through Buddhism*], Published by the author for free distribution, 1971.

[169] Poon Kanjanarod. Phutthasatsana Tae Ching Tam Lak Wittayasat. (Looking through the authentic Buddhism with scientific method). 1971. p.6

[170] Yong Huntrakul, *Phuttatam Kap Wittayasat* (Buddhadhamma and Science), Phra Nakhon, 1954.

The criticism of modern science encouraging materialism is not the theme discussed solely in the Science-Buddhism dialogue but also in the dialogue between Christianity and science. However, the meanings of the term differ in these two dialogues. One of the core themes in the Christianity and science dialogue is the incompatibility between scientific materialism and biblical literalism. However, the meaning of materialism or 'scientific materialism' differs from those of Buddhism. The materialism in the Christianity and science dialogue tends to be the view focusing on the verification of reality, as 'reality only consists of what is verifiable by the observational and experiential of science,' while the biblical literalism asserts that 'the bible is inerrant, therefore must be taken literally.'[171] These two perspectives are in conflict; hence, some believe that Christianity and science are incompatible. While the Buddhist meaning of materialism focuses on the material objects; the argument in the Science-Buddhism dialogue emphasises that science encourages a person to obtain material objects and gain pleasure from them. However, Buddhism states that possessing material objects does not always bring pleasure, thus Buddhism focuses on how to overcome dukkha (suffering).

- *Karma, Cause and Effect*

Karma is one of the core Buddhist teachings. Karma's basic meaning deals with action. It is one of the main aspects that every Science-Buddhism dialogue book brings up to argue the scientific character of Buddhism. Karma has two main interpretations: traditional and reformist approaches. The traditional approach of Karma follows the

[171] J O Baker., 'Public perceptions of incompatibility between 'science and religion', *Public understanding of science,* Vol. 21(3), 2012, p. 341 and p.342.

orthodox Buddhist cosmography, *Traiphum*, which I discuss in Chapter 2. Its interpretation of karma is the moral quality of deeds which beings perform. The births and rebirths of beings, as well as going to heaven or hell after one's death, are determined by one's karma. A human's well-being and socio-economic status are the outcome of karma from one's previous life as well as one's next life is the consequence of one's good or bad deed in this life. While the traditional approach weighs greatly on karma for beings' incarnations, the reformists tried to de-emphasize the significance of karma on beings' socio-economic status in their present, next, and previous lives.

Instead, the reformist approach focuses the outcome of karma on being's present. The reformist approach also emphasises the capacity of individuals to change their own karma and achieve their own religious liberation. Reformist Buddhism began in the late nineteenth century, King Mongkut (r.1851-1868) started the reform as a part of the country's civilization. Heaven and hell were questioned regarding their persistence and locations. King Mongkut argued that 'heaven is in one's breast, hell is in one's mind.'[172] Another key modern day reformist, Buddhadasa (1906-1993), one of the best-known Thai Buddhist monks was a prolific writer and outstanding Buddhist monk. He was praised as 'the most influential contemporary Buddhist philosopher monk in Thailand.'[173] The following section offers some examples of how the Science-Buddhism dialogue books argue for the scientific character of the law of karma. It is noted that time does not play a role in the authors' perspective on karma. Some books published relatively late e.g. *Praputtasatsana Kap Wittayasat (Supreme science of the Buddha)* (1982) propose the conservative approach of karma. On the other hand, *Phutthasatsana*

[172] Phaisan, 2003, pp. 9-11
[173] See e.g. Jackson (1989), Swearer (1981).

Thae Ching Tam Lak Witthayasat [Authentic Buddhism according to Scientific Principles*]* which was published earlier in 1971 accommodates the reformist approach of karma.[174]

Phutthatham Kap Witthayasat (Buddha Dhamma and Science), the second book on the Science-Buddhism dialogue published nearly eighty years after *Kitchanukit*, embraces the traditional Buddhist approach, and defines the karma as 'one's present life being the result of one's past actions and the future will be the result of the present'. Another statement confirms the conservative approach of the author, 'all the activities of a human must conform to the law of karma.' [175]

The books that employ the reformist approach include *Phutthasatsana Thae Ching Tam Lak Witthayasat [Authentic Buddhism according to scientific* principles*]* published in 1971. The book was written by a medical doctor, Kancharoj, who explained some traditional Buddhism beliefs using biological concepts. For example, he stated that there can be no past and future life because when one dies every organ stops working including one's brain. According to Kancharoj, the brain is the most important part of a body and is the source of energy, ideas, mind, and spirit. Thus, a dead brain is the end of everything. Kancharoj remarks that 'there is no afterlife nor hell nor heaven to face, but it is in the present life that one faces hell or heaven all the time; feeling happy means going to heaven, feeling sad means going to hell.'[176] Kancharoj was inspired by Buddhdasa's teaching and, as a result, he followed Buddhadasa's interpretation of 'this-worldly Buddhism', a reformist concept. Poon states that karma is action with intention, for every action that has been taken there is always a consequence of the action.

---

[176] Poon Kanjanaroj. 1971, p.9

Buddhadasa explains, in his book, that Dhamma is equivalent to the laws of nature and its practice is scientific in nature.[177] These scientific methods involve observing and experimenting. Buddhadasa gave an example of the Buddha's enlightenment, which to him is the great example of accommodating scientific methods. The book reflects Buddhadasa's 'reformist' doctrinal interpretation, for example arguing that karma from one's previous life can be amended by controlling Ayatana (the six senses) in the right way and then one can cease the suffering (dukkha). In this way, karma cannot affect one's life. He suggests that 'hell and heaven are both in one mind and thought; they are not the place where one reaches when one is dead'.[178]

It is intriguing that one book applies both conservative and reformist approaches. In *Laktam Tang Putthasatsana Priap Thissadee Tang Wittayasat* [The comparison between Buddhism doctrine and scientific Theory] (1971), Luang Doem Bang Boriban, the author, differentiates karma into two groups: past and present karma. He explains that the past karma contributes to one's appearance and socio-economic status while the present karma is one's actions. Luang Doem Bang Boriban argues only on the present karma which he proposes agrees with Newton's law of motion.

- **Kalama Sutta**

Kalama Sutta was often brought up in the Science-Buddhism dialogue as vital evidence to demonstrate that Buddhism is science or that Buddhism is the scientific religion – as Kalama Sutta can be regarded as scientific method. Kalama Sutta is a sutta in Sutta Pitaka of the *Tipitika*. The Buddha delivered Kalama Sutta to Kalama people in

[177] Buddhadasa. 1979. Thamma Khue Wittayasat [Dhamma is Science].
[178] Buddhadasa, p. 142.

Kessaputta village. The sutta concerns the enquiry and confirmations that one should make depending on one's own experience. The Buddha elaborated that it is proper that one has doubts or experiences uncertainty. He told Kalama people to doubt certain hearings, traditions, rumours, scripture, surmise, axioms, specious reasoning, a bias towards a notion, which are seemingly trustworthy.[179]

Kalama Sutta is one of the oldest themes in the Science-Buddhism dialogue, and it appears the first time in the first book of the genre, *Kitchanukit*.[180] It is intriguing that the narrative regarding Kalama Sutta in *Kitchanukit* remains roughly the same with those of contemporary books. Bonnak argues that 'Kalama Sutta is scientific method given that it recommends a human not to believe in anything right away but one needs to listen and contemplate before making a decision.'[181] Luang Doem Bang Boriban argues similarly to Bunnak, he adds 'the procedure is exactly what the Buddha had accommodated to reach his enlightenment; the Buddha had taught the procedure in Kalama Sutta.'[182]

Buddhadasa proposed an explicit example of a scientific approach in Buddhism, the canonical text *Kalama Sutta*, arguing that its teaching amounts to instructing a Buddhist to adopt a degree of scepticism and not readily believe everything.[183] I found that Buddhadasa's main point is intriguing because he is not trying to identify Buddhism's

---

[179]Anonymous. *Phratripidok Chabap Prachachon [Tipitika for the General Public]*, online version. Volume 20, http://www.84000.org/tipitaka/pitaka_item/v.php?B=20&A=4930&Z=5092, [accessed 31 January 2014].

[180] ThippakorawongKitchanukit, pp.175-180

[181] Yod Bonnak, Thamma Kiao Khong Kap Wittayasat Yang Rai [What is the connection between Buddhism and science?] [n.p.], 1972, p. 5.

[182] Luang Doem Bang Boriban, *Laktam Tang Putthasatsana Priap Thissadee Tang Wittayasat* [The comparison between Buddhism doctrine and scientific Theory], 1971. pp.37-41

[183] Buddhadasa, pp.75

scientific characters like some other authors, but he suggests Buddhists view Dhamma as science. What does he mean by science? He particularly focuses on scientific characteristics of experimenting, analysing and drawing conclusions. These scientific methods, he argues, are what the Buddha had accommodated to achieve his enlightenment. Moreover, the Buddha had taught Buddhists through these methods.

- **The Buddha is the great 'mind scientist'**

A great range of the Science-Buddhism dialogue books published in the 1950-1980s praise the Buddha as a great scientist. Their arguments are based on several themes; first, the Buddha, more than two thousand years earlier, knew certain scientific knowledge, that modern scientists had only recently discovered. However, these books argue, the Buddha did not reveal all of his knowledge; he had selectively disseminated the knowledge which is of benefit to the cessation of dukkha. The argument was explained using the analogy of leaves. It says that the leaves in the whole forest are an analogy applying to the enormous quantity of the Buddha's knowledge. However, only a handful of those leaves are what the Buddha taught. The second argument is that the Buddha is a great scientist because his enlightenment was a process of scientific method. These are two main themes that these Science-Buddhism dialogue books apply to support their claims. For example, in *Wittayasat Sueksa Phuttasatsana* [Understanding Science through Buddhism], Ketsingha remarks that the Buddha was the sapphanyu (omniscience) who was very knowledgeable but he had disclosed only some of his knowledge to the Buddhist.[184] He explains that the Buddha had knowledge as much as all the leaves in the forest but the knowledge he taught his followers was as

[184] Ketsingha, p.70.

small as a handful of leaves.[185] Buddhadasa affirmed that the Buddha was a scientist but he was 'Nakwittayasat Tang Chitchai' [the mind/spiritual scientist], given the mind is the most important therefore the Buddha is the 'greatest scientist'.[186] Bunnak also argued that the Buddha is the world's greatest scientist since he had always applied the scientific method in search of the practice leading to the cessation of dukkha.[187] He adds that the Buddha defined the aim, next he searched for the methods that had been done by others and he contemplated those existing methods and conducted his own experiments; finally he enlightened others. His process could definitely be considered the scientific method nowadays.[188]

- *The new physics*

The twentieth century has witnessed great scientific discoveries, particularly in physics. Some would consider it, the physical revolution-- the fourth revolution in the physical world. The new physics is a term used to describe the science advances discovered in the early twentieth century. The discoveries of the New Physics are mainly contributed to Einstein's findings e.g. the Theory of Relativity, the Quantum Theory and the discovery of radioactivity. However, the new physics was not a core theme in the Science-Buddhism dialogue in the popular books published in the twentieth century, although a few authors of the genre have referred to Einstein and his theories to demonstrate their compatibility with science. However, the books do not elaborate on the aspects. Most importantly the early books mentioning Einstein's theories tend to

[185] Ibid, p.72.
[186] Buddhadasa, pp. 45-53
[187] Bonnak, p.5.
[188] Ibid, pp. 5-7

have mistaken his theories. For instance, Bunnak claims 'the Buddha said that energy and matters are 'rup'; therefore they can exchange their forms.'[189] Bunnak interprets the Buddha's word regarding rup and matter as Einstein's equation, E=mc2, therefore, he claims that the Buddha discovered the equation earlier. I found that Bunnak's claim is rather vague since he did not specify the meaning of 'rup'. Rup has a few meanings, i.e. the Thai general meaning for 'Rup' is 'picture'; Rup has origin from Sankrit 'rupa' means 'form'. It is difficult to grasp Bunnak's claim without confirming the meaning of 'rupa'. In addition, since Bunnak did not elaborate on the meaning of rupa, it seems unclear to see the connection between rupa and the equation.

Another example showing an author's flaw and misunderstanding in the new physics is *Wichai Phutthasatsana Priapthiap Kap Lak Witthayasat [Research on the Comparison between the Buddhist Philosophy and Scientific Laws]*.[190] It argues that the law of karma is the same as Einstein's law of thermodynamics. He proposes 'the law of karma is the law of nature; the principle of karma is when a being takes any action, he creates some energy at the same time. The energy remains after the being has finished the action which is exactly what the Law of Thermodynamic says.'[191] U-tukkapad adds that 'according to the Law of Thermodynamic, the energy remains constant. Heat is a form of energy, and heat conserves energy.'[192] U-tukkapad discusses at length on the law of thermodynamics, thermograph, and infrared which I found them to be rather unnecessary to his argument.[193] U-tukkapad concludes that the law of thermodynamics

---

[189] Bunnak, p.10

[190] Chalo U-tukkapad. *Wichai Phutthasatsana Priapthiap Kap Lak Witthayasat [Research on the Comparison between the Buddhist Philosophy and Scientific Laws*]. Praepittaya, Pra Nakorn. 1969.

[191] Ibid, pp. 138-139

[192] Ibid., p. 144

[193] Chalo's discussion was twelve pages long, pp. 144-151.

and the law of karma are compatible. I do not aim to judge U-tukkapad's argument regarding the compatibility between the law of karma and the law of thermodynamics. However, I found that U-tukkapad had mistaken the critical fact since he refers to the law of thermodynamics as Einstein's discovery. In fact it is not the case, as the law of thermodynamics is a fundamental law of physics and has been developed by a few scientists.

The term 'new physics' was directly translated to Thai language as 'phisik samai mai' or 'phisik mai'; 'Mai' means new. In the popular account, the Science-Buddhism dialogue books in particular, the term 'phisik mai' was first used in 1984 when *Tao Hang Physics (The Tao of Physics)* was translated to Thai language.[194] The original version was published in 1975 and it was translated to Thai in 1984.

The renowned book, *Tao Hang Phisik (Tao of Physics)* deals with the dialogue of science and Buddhism, however, the Buddhism tradition regarded is Mahayana Buddhism, which is different from Thai Theravada Buddhism. The book was translated to Thai and first published in 1984, although, the sale was not a phenomenon but it was reprinted a few times in 1987, 1989 and 1993. Presumably around eight thousand copies were sold, which is significantly lower sale figure in comparison to the phenomenal sale of *Einstein Phop Phraputtachao Hen*.[195] It can be understood that despite being the renowned book and one of the pioneer books on the dialogue between the new physics and Buddhism in the international market, *Tao Hang Phisik* is not of significant interest to Thai. One possibility is the limited familiarity of Tao to the Thai public.

---

[194] Wanet, trans. Fritjop Capra. *Tao Haeng Phisik (The Tao of Physics).* Bangkok, Tienwan, 1984.

[195] The figure is my estimation bases on the book's editions; each edition was printed around two thousand copies. The data is from Wanet, trans. Fritjop Capra. *Tao Haeng Phisik (The Tao of Physics).* Bangkok, Dokya, 1993, p. 2.

- *Referring to Western scientists*

The Science-Buddhism dialogue books published from 1950s-1980s tend to refer to some famous Western scientists' work, the scientists who were often mentioned are Isaac Newton, Charles Darwin, and Einstein. The referrings tend to focus at the compatibilities between the Buddhist teachings with those scientific discoveries that aim to demonstrate that Buddhism is superior to science from variety of aspects. For example, the superiority of Buddhism is demonstrated by how early the Buddha had foreseen the modern scientific knowledge. They argue that it was more than 2,500 years before the scientists had discovered the knowledge and were catching up with Buddhism. It is noted that there is a significant difference between the practices of comparison in the Science-Buddhism dialogue books published in the 1950-1980s and the books published later. The 1950s-1980s books do not attempt to indigenize those scientists in the comparison, however, that is the case for the books published later which I explore further in Chapter 4.

Phutthatham Kap Witthayasat [Buddha-Dhamma and Science] is one example of a book that explicitly mentions influential scientists and the principles they proposed when making a comparison between Buddhism and Science.[196] Huntrakul refers to Newton's third Law of Motion by comparing it to the law of Karma. Huntrakul explains that as the law of motion states that for every action there is an equal and opposite reaction; it is the same as the law of karma which suggests that for every action one takes, there will be reactions as consequences of the action. Huntrakul argues that 'in

[196] Huntrakul, p.20.

fact, the mother of Newton's third law of motion is the Buddhist's law of karma'.[197] *Wichai Phutthasatsana Priapthiap Kap Lak Witthayasat [Research on the Comparison between the Buddhist Philosophy and Scientific Laws]* also refers to Newton. It argues that Newton's law of motion is consistent with the law of karma.

As shown in some of the examples, these books selectively mention some Western scientists' names and works to a small degree but none discussed the scientists' characteristics. The practice was changed from 1990s onwards as more scholars have authored popular books, which I present and discuss in Chapter 5.

The core themes in the Science-Buddhism dialogue books published between the 1990s-2000s.

This section investigates the major themes presented in the Science-Buddhism dialogue books published between the 1990s-2000s (See Table 3.2 for list).

Table 3.2 List of the books on the Science-Buddhism dialogue published 1990s-2000s

1991-2000 (8)	1) Sompan Promta. 1991. *Puttasatsana Lae Wittasat [Buddhism and science]*. 2) P. A. Payutto. 1992, 1998. *Puttasatsana Nai Thana Pen Raktan Khong Wittayasat (Buddhism as the foundation of science).* 3) Prasarn Tangjai. 1995. *Thamma wittayasat: Rueang Kong Manut, Lok, lae Chakkawan [Dhamma Science: The Stories of Human, Earth and Universe]*. 4) Chaiyapuek Penwijit. 1996. *Puttasat Kap Wittayasat [Buddhism and Science]*.

[197] Ibid, p.21

	5) P.A. Payutto. 1997. *Chewit nai sungkom tecnologi [Living in Technology Society].* 6) Anuch Apapirom. 1998. *Nippan Nai Sattawat Ti Yisip [Nirvana in 20th Century]*. 7) Sompan Promta. 1999/ 2005. *Puttapradya: Manut Sangkom Lae Panha Sillatham. (Buddhism Philosophy: Human, Society and Ethical Dilemma)*. 8) Rawee Pawilai. 2000. *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (A Comparative View of Science and Buddhism)*.
2001- 2010 (23)	1) Samak Burawas. 2001. *Puttapratya: Mong Puttasartsana duay Tassana Wittayasart (Buddhism Philosophy: Viewing Buddhism through Science Vision)*. 2) Aumnat Charoensin. 2002. *Wittayasat Kap Satsana (Science and Buddhism).* 3) Tanu Kaewopat. 2003. *Aisatai Nai Putthapratya (Einstein in Buddhism Wisdom)*. Bangkok, Sukkhapharpjai. 4) Sak Bowon. 2004. *Aisatai kap Phuttha: pratchaya khukhanan thi banchop phopkan [Einstein and Buddhism: the Convergent Parallel]*. Nonthaburi: Samnakphim Samit. 5) Churairat Sanjairak. 2005. *99 pi Buddhadasa: Sadsana kap Physics Mai [99 years Buddhadasa: Religion and New Physics*]. 6) Jetsada Tongrungroj. 2005. *Albert Einstein: Manut Lae A-pi-manut (Albert* Einstein; Human and Superhuman Sides).

7) Phiphat Phasutharachat. 2005. *Ongruam: Botwiphak Waduai Witthayasat lae Satsana Nai Sangkhom Thai [Holism: A Critical Review of Science and Buddhism in Society].* Krung Thep: Sayam.

8) Suppawan P. Green. 2006. *Einstein Tam Phraputtachao Top (Einstein Questioned, Buddha Answered).*

9) Olarn Peantham. 2006. *Tamha Kwamjing: Wittayasat kap Puttatham, Sat ti pen kon la reung deaw kan [The Investiagation: Science and Buddhism]*.

10) Panyanunto. 2006. *Praputta Kap Wittayasat [The Buddha and Science]*.

11) Soraj Hongladarom. 2006. *Kwamtai kap Kantai: Moommomg Satsana kap Wittayasat [Death and Dying: Scientific and Religious Views].*

12) Dalai Lama and Petcharat Pongcharoensuk. 2007. *Jakkawan nai Nueng Atom: Kan Lomruam Wittayasat kap Jitwinyan [The Universe in the Single Atom: the Convergence of Science and Spirituality]*.

13) Som Sujira. 2007. *Einstein Pop, Phraputtachao Hen [Einstein found, Buddha had seen].*

14) Thetpenyo Phikku. 2007. *Suksa Satsana yang Wittayasat: Sarup Tissadi an pen Huajai Puttasatsana tam naewtang khong tan Phuttatat [Study Buddhism with Science: the Heart of Buddhism according to Buddhadasa]*.

15) Akkara Suppachet. trans. 2008. *Panyayan khong Einstein [Einstein's Intuition].*

16) Kongsak Tanpaijit. 2009. *Phutta Adchariya [Buddhism Intelligence]*.

17) Chatuphon Wichitsanoi. 2009. *Khwamlap Khong Chakkawan Chak Phraphutthachao su Cern [The Secret of the Universe from the Buddha to CERN]*. Krungthep: Mekkuru.

18) Nongnaphat Thiangkamon. 2009. *Prat tua ching: nak witthayasat khae ru sapphanyu khue Phraphutthachao [The Genuine Philosopher]*. Krungthep: Prat Samnakphim.

19) Ricad Matthieu, Xuan Thaun Trinh, Kunsiri Charoensupphakun, and Bancha Thanabunsombat. 2009. *Khwontam kap dokbua: kandoenthang su phromdaen thi witthayasat lae phutthasatsana ma banchop (Quantum and Lotus)*. Krungthep: Suanngoen Mima.

20) Hem Yanwiro. 2010. *Bangsing thi nasiiadai-- 'Aisatai mai khoei phop tae Phraphutthachao hen [Some disappointing that Einstein had Never Discovered but the Buddha Had Seen].*

21) Prawet Wasi and Wiwat Khatithammanit. 2010. *Thammachat khong sapphasing: kankhaothung khwam ching thangmot [Nature of Everthing].* Nonthaburi: Samnakphim Krin-Panyayan.

22) Namchai Chiwawiwat. 2010. *Kam-bang-kot Plaek Ching Witthayasat [Scientific Rules are in the shadow of Karma]*. Krungthep, Sarakhadi.

23) Som Sujira. 2010. *Einstein Pop, Phraputtachao Hen II [Einstein found, Buddha had seen II]*.

Table 3.2 shows the books on the Science-Buddhism dialogue published between the 1990s-2000s. There were eight books on the Science-Buddhism dialogue published in the 1990s, the figure rapidly increased nearly three hundred percent to twenty-three books published in the 2000s. The substantial increase of the Science-Buddhism books correlates with the growth of books on the Einstein-related stories, as the examination in Chapter 4 will reveal. Therefore, a conclusion can be draw that the popular account of Einstein proliferated in Thailand in 2000s. Clearly, the proliferation of Einstein was relatively delayed compared to the universal celebration of Einstein. I shall return to elaborate on this statement in Chapter 5**.**

The Science-Buddhism dialogue books published between the 1990s-2000s demonstrate two key themes as follows.

- *The New Physics*

In the period of the 1990s-2000s, the Science-Buddhism dialogue substantially engaged the new physics, particularly in the 2000s. Most importantly, the dialogue focused on Einstein, the main contributor to the new physics. As discussed in the previous section, although some Thai authors slightly referred to Einstein and his findings to argue the compatibilities between science and Buddhism in some books published before the 1990s the narrative did not elaborate on Einstein's findings in detail. This absence of elaboration and some flaws in the discussion of Einstein's theories reflect a lack of understanding of the theories among the authors who wrote the popular books on the Science-Buddhism genre before the 1990s. Prasan Tangjai (M.D.) also briefly mentions the concept of the New Physics in his books in order to lay

background knowledge for his readers to follow his argument on the compatibility between new physics and Buddhist teachings.[198]

- *Focusing on an individual scientist, Einstein.*

The key theme in Science-Buddhism dialogue that emerged in the mid-1990s to the 2000s is a focus on the individual scientist, Einstein. Although, since the 1960s, the Science-Buddhism dialogue books have referred to Western scientists e.g. Galileo, Newton, Darwin, and Einstein and their work, the books often focus on these scientists' work rather than their characteristics, which is the case for Einstein. Moreover, these scientists were fairly equally explored, however, none of these scientists were given a dominant role in these books. Einstein has been portrayed in a different way, particularly in the 2000s.

The practice of indigenizing Einstein in the science-dialogue books that focus on him had developed from lesser degree in the mid-1990s to greater degree in the 2000s. In the 2000s, Einstein was made a leading scientist in the dialogue between science and Buddhism. Some authors put Einstein's name into their book's titles. Eight out of twenty-three books on Science-Buddhism dialogue published in the 2000s used the name 'Einstein' in their titles. It is a striking practice of the books published in the 2000s, since it is not the case in other time periods. The practice demonstrates the interest in Einstein among middle-class Thai. The focus on Einstein in these books applied great range of practices, particularly attempting to indigenize him e.g. comparing him with the Buddha,

[198] Prasan Tangjai, *Thamma Wittayasat: Rueang Kong Manut, Lok, lae Chakkawan [Dhamma Science: The Stories of Human, Earth and Universe]*. 1995.

comparing his character with Buddhist values, and disseminating his alleged quotation on Buddhism.

The 1990s was a time that more academic scholars wrote popular books on the Science-Buddhism dialogue. The 1990s-2000s witnessed nine out of thirty-one books on Science-Buddhism dialogue in total, were written by academic authors. These scholars are a mixture of university lecturers, Buddhist scholars, and scientists. These scholars tend to have a different approach from the non-academic authors of the Science-Buddhism dialogue books, relying on accurate sources in their books. They accept the differences between science and Buddhism, although some authors often argue that some Buddhist teachings may share some foundations with science. In addition, some of them clearly state their praise of Buddhism. For example, Pawilai suggests that the traditional Buddhist cosmography in *Traiphum* is not compatible with modern cosmology.[199] He states that no one should try to argue the harmony between those two entities.[200] Phromta suggests that science and Buddhism are different in many aspects, for instance, how they treat nature. According to Phromta, Buddhism does not try to control nature while science tries to master nature.[201] The academic authors tend to conclude that Buddhist aims to overcome suffering (Dukkha) are, according to them, the most important objective of a human being. In contrast, science is often criticised by these academic authors as being overly focused on the material while Buddhism focuses on the mind. For this reason, they argue, science is likely to cause problems as it lacks the morality and ethics of Buddhism.

---

[199] Rawee Pawilai. *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (The comparison of Science and Buddhism).* Bangkok, Buddhadhamma Foundation, 2000, p.29

[200] Ibid, pp.29-30

[201] Somphan Phomta, p.125

The core themes of the Science-Buddhism dialogue books published between the 1990s-2000s demonstrate a significant theme concerning Einstein, the term I refer to as the 'indigenization' of Einstein. The theme became a key theme in the 1990s and flourished in the 2000s. The indigenization of Einstein was referred to in a majority of the Science-Buddhism dialogue books published in the 2000s. Some authors have included Einstein into their book titles to demonstrate their focus. As mentioned earlier, eleven out of twenty-three or approximately fifty percent of the listed books, have Einstein in the titles. It is the major theme and the focus of my thesis thus I devote a whole chapter to the theme in Chapter 5**.** Although the indigenisation of Einstein has become the key theme in the period (1990S-2000S), I also found that the core themes in the Science-Buddhism dialogue books published in the previous period (1950s-1980s) remain, such as: the materialism of science, karma, and the Kalama Sutta. Next, I show the patterns of the Science-Buddhism dialogue.

The patterns of the dialogue between science and Buddhism

These Science-Buddhism dialogue books engage three keys patterns of dialogues as follows.

- *Elaborating on the differences between science and Buddhism*: criticized science as being focused on materialism that is perceived as posing significant problems for spiritual development. A central tenet of Buddhism is the alleviation of suffering through the development of one's mind. The claim was often elaborated upon thus: Buddhism concerns the mind while science concerns matter but mind is more important than matter. According to these claims, science may be very advanced in its understanding of the material world but it has limited knowledge of the human mind. For example,

Ketsingha criticised science for bringing messiness to human life as stated earlier.[202] Meanwhile Huntrakul stated that the Buddha did not focus on material facts, for instance, whether the world is flat or round and other materialist facts. Since these facts were unnecessary for living, the Buddha's main concern was to the cessation of dukkha (suffering) in life.[203]

- *Classified the similarities to validate Buddhism*: many of these Science-Buddhism publications claimed that there were significant similarities between science and Buddhist teaching. Claims of similarities between some of the Buddha's Dhamma and some science principles was another strategy regularly encountered in these books. These claims always concluded that the Buddha had discovered these science principles long before modern scientists did, so it was concluded that Buddhism is superior to science. For instance, Bunnak stated that scientific discoveries were similar to the Dhamma.[204] While these theories were discovered by well-known scientists, it was the Buddha who had discussed these issues first. Therefore, it was again concluded that Buddhism is superior to science.

- *Claimed the superiority of Buddhism over science*. The superiority of Buddhism that these books argue is how early the Buddha had accurately revealed some of the scientific knowledge. They claim that at least 2,500 years before science, the Buddha discovered various claimed scientific knowledge. Moreover, the Buddha supposedly discovered the knowledge without any instruments.

---

[202]Ketsingha, p.4
[203] Huntrakul, p.47
[204] Bunnak, p.67

In the next section I examine the Science-Buddhism dialogue in another media outlet– newspapers.

3.2 The Science-Buddhism dialogue in selected newspapers

This section examines the Science-Buddhism dialogue's treatment in three selected Thai newspapers: *Thairath*, *Matichon*, and *Krungthepturakij*, aiming to determine the role of the Science-Buddhism dialogue in Thai society. It may be useful to note, as mentioned in the Introduction chapter, that the digitalised newspaper archive in Thailand is inadequate, thus it has become the great limitation of my thesis. Therefore, I had to use the only digital newspaper archive belonging to a newspaper, *Matichon*. The origin of the archive was to be a resource for its own journalists but later on extended its service to the public.

In order to further support my theory of the unique presence of the Science-Buddhism dialogue in popular books I researched its mention in Thai newspapers, specifically as noted, in the *Matichon*. First, I searched the *Matichon* electronic archive (available for newspapers published from 1996-2013) by applying two search terms in Thai language: 'science and religion' and 'science and Buddhism'. The result shows ten articles on the themes with the list of titles as follows:

1. Paisal Visalo. 'Lok tang pong pi nong kan [We all are brothers and sister]'. *Matichon*, 1 February 2004, p.6
2. Peerasak Suntarosod. 'Wittayasat plian thamma mai plian [Science is changeable but dhamma is not]'. *Matichon*, 8 February 2004, p.6
3. Anon.'Phrathep song nae phut-wit tong ku kan [Princess Sirindhorn suggests Buddhism-science complement each other]'. *Thairath*, 4 August 2007

4. Anon. 'Phraphuttachao kap Einstein [The Buddha and Einstein]'. *Thairath*, 8 September 2007.
5. Kanda Buntuen 'Einstein Phop, Phraputtachao Hen'. *Krungthepturakij*, 23 March 2008, p.10
6. Anon. ‘Buncha Tanaboonsombat: chuan kid reung aisatai [Buncha Tanaboonsombat: Let's talk about Einstein], *Krungthepturakij*, 27 April 2008, p.9
7. Anon. 'Kan sandap tang kwamkid chak *Einstein Phop, Phraputtachao Hen* [What we learnt from *Einstein Phop, Phraputtachao Hen*?], *Krungthepturakij,* 27 July 2008, p. 8
8. Piknoksikhao, 'Kwam pidplad khong *Einstein Phop, Phraputtachao Hen* nai lakkan hedphon Dr. Buncha Tanaboonsombat [The flaws in *Einstein Phop, Phraputtachao Hen* from Dr. Buncha Tanaboonsombat's view]’. *Krungthepturakij,* 3 August 2008, pp.11-12
9. Anon. *'Einstein Phop, Phraputtachao Hen:* kwamching ti Chomduen Satawut hen [*Einstein Phop, Phraputtachao Hen*: what Chomduen Satawut see]. *Krungthepturakij,* 27 October 2008, p.3
10. Siripong Wittayawirot. 'Wittayasat Kap Satsana: Peter Higgs Pata Richard Dawkins [Science and Religion: Peter Higgs against Richard Dawkins]. *Matichon*, 31 December 2012, p.6

As it can be seen, of this list of articles, there are ten articles on the Science-Buddhism dialogue in three newspapers in my period of examination (1997-2012). *Thairath* presented two articles while *Matichon* and *Krungthepturakij* covered three and five articles on the subject, respectively. In overall, the small coverage of the Science-Buddhism dialogue among these three leading newspapers, clearly demonstrates that

the dialogue is not considered the most newsworthy theme in the news print media, while it is the case in the popular books. The small figure of the Science-Buddhism dialogue articles correlates with the figure of science articles found in these newspapers discussed in Chapter two.

Among the total ten articles, six articles are on *Einstein Phop Phraputtachao Hen [Einstein Found, The Buddha Had Seen]*, which as noted, is discussed at length in Chapter 5, and the rest of the listed articles are discussed in this section.

Three articles focus on the compatibility between science and Buddhism and conclude that Buddhism is superior to science. Only one article, 'Phrathep song nae phut-wit tong ku kan [Princess Sirindhorn suggests Buddhism-science can compliment each other],[205] argues the compatibility and concludes that Buddhism and science can compliment each other. The article reports on Princess Sirindhorn's speech at the opening of a Buddhism and science conference, where the princess expressed that 'the conference is beneficial for the public to understand that Buddhism and science can accompany each other; the great example is the King who has always used dhamma and science to help the Thai public.' [206] This article focuses on the harmony between Buddhism and science rather than the superiority of one over the other, which is different to the other two articles on the Science-Buddhism dialogue.

The other two articles claim the superiority of Buddhism over science, but to different degree in their claims. One article was written by a renowned Buddhist monk who regularly writes for newspapers, magazines, and books on Buddhism, Paisal Visalo.

---

[205] Anonymous, 'Phrathep song nae phut-wit tong ku kan [Princess Sirindhorn suggests Buddhism-science complement each other]'. *Thairath,* 4 August 2007, p.1.
[206] *Thairath,* 4 August 2007, p.1.

Another piece 'Wittayasat plian thamma mai plian [Science is changeable but dhamma is not] is an interview of a scientist Professor Peerasak Suntarosod (PhD.), Director of the science and technology research institute also a strong believer in Buddhism.[207] Suntarosod emphatically argues on Buddhism's superiority to science. He contends that 'Buddhism is compatible with science given Buddhism talks about nature which demonstrates the impermanence, instability, and inconstancy'.[208] He adds that Buddhism can explain many scientific facts, and on the contrary, science can explain very little of Buddhist teachings. Another argument which Suntarosod uses in claiming Buddhism's superiority is that 'scientific knowledge is unstable and changeable while the Buddha's teachings had not fallen into decay.'[209] According to Suntarosod, an example of the uncertainty of scientific knowledge is the change of concepts regarding matter as 'before Einstein had established his findings, scientists thought that matter can not be destroyed but later on Einstein denied the notion and stated that matter can change its form to energy'.[210] The argument is also one of the most common themes in the popular books published after the 1990s demonstrating Buddhism's superiority over science. He concluded that 'science and Buddhism can complement each other, by balancing both will benefit human.'[211] It seems that Suntarosod proposes several arguments in one article. However, with limited space of newspaper, his arguments seem unclear and ask for more elaboration. The article is an example of how challenging the newspaper medium can be for discussing detailed content.

---

[207] Uraiwan Srisuk 'Wittayasat plian thamma mai plian [Science is changeable but dhamma is not]. *Matichon*, 8th February 2004, p.6
[208] Ibid.
[209] ibid
[210] Ibid.
[211] ibid

The other article by Phra Paisal is titled, 'Lok tang pong pi nong kan [We all are brothers and sisters]'.[212] It focuses on encouraging humans to be kind and help each other by maintaining that we are all brothers and sisters. Phra Paisal supports his argument with some Buddhist teaching and some scientific facts to convince his readers. He asserts the Buddha said that everything on earth is naturally connected, coincidently some new scientific findings have recently discovered this interconnectedness may well be true. Phra Paisal refers to an article, 'The Royal We', which claims that all Europeans descended from one person.[213] His article demonstrates the harmony between Buddhist's teaching and new scientific findings on the natural connections of human kind. On the contrary to previous mentioned article, Paisal seems to be more neutral and compromising than Peerasak.

As noted, six articles were on the book, *Einstein Phop Phraputtachao Hen*, it indicates that the book has a strong influence on the coverage of Science-Buddhism dialogue in newspapers. These six articles on Science-Buddhism dialogue are discussed in detail in Chapter 5**,** however, I will give a brief overview of them here. Five of the articles on the book were published in *Krungthepturakij* and one article was published in *Thairath*. Surprisingly, *Matichon* did not cover any article on the book despite the book's popularity and sales. There are a few possible explanations on the absence of the debate in *Matichon*. Although, the best answer would have come from *Matichon*'s journalists, however, as I have discussed earlier, *Matichon* does not have a science

[212] Paisal Visalo. 'Lok tang pong pi nong kan [We all are brothers and sister]'. *Matichon*, 1 February 2004, p.6

[213] Steve Olson. 2002. 'The Royal We'. *The Atlantic*. http://www.theatlantic.com/magazine/archive/2002/05/the-royal-we/302497/. [Accessed 12 April 2015].

editorial desk. Thus it is not possible to interview a journalist who is responsible for the issue. However, we can get some idea on the *Matichon* stance towards the criticism of the book from my interview with the Chief Editor of *Matichon* Books Publishing, Siripong Wittayawiroj who also writes columns for *Matichon*. Since Wittayawiroj was interviewed as the representative of the *Matichon* Books Publishing it can be somewhat assumed this is also his view for *Matichon* newpaper. He seems to keep distance from the debate over *Einstein Phop Phraphuttachao Hen.* However, he commented that the situation is difficult for the publisher because the book sold so well; although there are some criticisms on the accuracy of the book content, the publisher did not want to take the book off the shelves. According to Wittayawiroj, the debate was a good example of cross checking the book content by readers. He added that 'the debate over *Einstein Phop Phraputtachao Hen* is unprecedented; the Internet has unleashed the debate and gives the readers' power to discuss since newspapers did not cover the debate.'[214]

Among six articles on *Einstein Phop Phraputtachao Hen,* two articles admire the book for its compelling arguments on the compatibilities between science and Buddhism. One of the articles, written by Chomduen Satawut comments that *Einstein Phop Phraputtachao Hen*'s standpoint on science and Buddhism is 'progressive'.[215] Another article in *Thairath* titled 'Phraphuttachao kap Einstein [The Buddha and Einstein]', praises the author of *Einstein Phop Phraputtachao Hen* for thoroughly conducting research before writing the book.[216] On the contrary, two articles criticise

[214] Siripong Wittayawiroj, Interviewed by Chinnalong, Bangkok, 2010.
[215] Chomduen Satawut. 'Einstein Phop, Phraputtachao Hen: kwamching ti Chomduen Satawut hen [Einstein Phop, Phraputtachao Hen: what Chomduen Satawut see]. Krungthepturakij 27 October 2008, p.3
[216] Lom Plain Tid, 'Phraphuttachao kap Einstein [The Buddha and Einstein]'. *Thairath*, 8 September 2007. p.5

the inaccuracy of physics content that *Einstein Phop Phraputtachao Hen* discusses; these articles express Thai scientist, Buncha Tanaboonsombat's views. Tanaboonsombat had started the criticism on *Einstein Phop Phraputtachao Hen* in his blog before other Internet users discussed the topic on Pantip. 'Kan sandap tang kwamkid chak *Einstein Phop Phraputtachao Hen* [What we learnt from *Einstein Phop Phraputtachao Hen*?] does not comment the book but supports the criticism of the book by others and also encourages its readers to follow the discussion on the books found on the Internet.[217]

Another article '*Einstein Phop Phraputtachao Hen'*, whose title suggests its content will focus on the book, however, that is not the case. The article concentrates on introducing a new healing plan, combining meditation with medicine. Although the article argues that science resembles Buddhism which is similar to *Einstein Phop Phraputtachao Hen*'s argument, it does not mention the book in its content. From my point of view, the columnist chose the title of the book, *Einstein Phop Phraputtachao Hen*, to be the article's title to draw readers' attention to the article since the book was popular when the article was published.

My examination demonstrates that the Science-Buddhism dialogue is not a newsworthy topic for the Thai journalists, however, it does not necessarily mean that the readers are not interested in the topic, since there are a substantial number of popular books on the Science-Buddhism dialogue. Moreover, one of the books on Science-Buddhism dialogue was on the top ten bestselling list for a long period of time. From my point of view, it is possible that newspaper's limited space is a main factor which contributes to the absence of Science-Buddhism dialogue coverage in

---

[217] Buncha Tanaboonsombat, 'Kan sandap tang kwamkid chak Einstein Phop, Phraputtachao Hen [What we learnt from Einstein Phop, Phraputtachao Hen?], *Krungthepturakij* 27 July 2008, p. 8

newspapers. Moreover, the Science-Buddhism dialogue is a specific topic which may only appeal to a niche group of the public who are likely to be the educated group.

The characteristics of Thai newspapers needs to be taken into consideration. Two characteristics play a major role in the small coverage of Science-Buddhism dialogue in the press: the low coverage of science stories and the lack of science journalists. As I have revealed earlier, the coverage of science is low in the Thai press, and science stories are considered less newsworthy than technology and gadgets content since the three Thai newspapers that I analysed do not have science section/ columns but do have technology and gadget section. This could have been a consequence of the lack of science journalists in the press.[218] Since writing science columns often requires certain understanding and interpretation of scientific content, the lack of science journalists makes it impossible for these newspapers to cover science content effectively. Therefore, they present updates of technology and gadgets instead of science content or scientific research.

The coverage of Science-Buddhism dialogue demands science and Buddhism comprehensions that the press could not possibly meet given that they lack journalists with the required scientific education and knowledge base. As a result, the coverage of science and Buddhism dialogue is very low. Moreover, Somsakul Paojindamuk commented that Thai newspapers' consider 'human interest' and 'new inventions' to be the main criteria for determining the news value of any event. He added that the criteria might help explain why gadgets updates are substantially covered in Thai newspapers

[218] *Tippawan Khongpraphan*, senior journalist of *ManagerOnline*, interviewed by Chinnalong, 4 December 2010. *ManagerOnline* office, Bangkok.

given they are easy for the readers to grasp.[219] McCargo and other scholars give an explanation for the lack of science and Buddhism coverage in the Thai press, which helps to confirm the results of my investigation.[220] He analysed content in Thai press and compared them with the press in other South East Asian countries such as Vietnam, Burma, Malaysia, Singapore, and others.[221] McCargo argues that Thai print media and newspapers in particular had a political element from their inception; newspapers in particular, were significantly involved in politics. McCargo's finding supports my analysis that given politics is what the Thai press focuses on, science and the Science-Buddhism dialogue had low coverage in the press. The next section investigates the dialogue of science and Buddhism on the online forum, Pantip to investigate how Science-Buddhism dialogue is discussed on the Internet, focusing on the Pantip discussion forum.

3.3 The Science-Buddhism dialogue in Pantip online forum.

In this section, I examine the Science-Buddhism dialogue as it is found on the Internet, focusing on the particular online discussion forum, Pantip. I determine the Pantip users' interest toward the Science-Buddhism dialogue by examining the amount of the threads on the dialogue. Furthermore, I investigate those threads' key themes, observing the atmosphere of the discussion, and follow up section with a comparison analysis between the key themes in Pantip forum and popular books. I expect the discussion in Pantip forum to be outstanding in reflecting the middle-class's view

---

[219] Somsakul Paojindamuk, science editor of *Krungthepthurakit.* Interviewed by Chinnalong, 24 January 2012, Bangkok.

[220] For example, D McCargo, Politics and the press in Thailand: media machinations, London: Routledge; 2000; G. Lewis, Virtual Thailand: The media and cultural politics in Thailand, Malaysia and Singapore. Routledge, London, 2006, Thanapol Limapichart, 'The emergence of the Siamese public sphere: colonial modernity, print culture and the practice of criticism (1860s-1910s)', The South East Asia Research, vol. 17, No.3, November 2009.

[221] D McCargo, 2000.

towards the Science-Buddhism dialogue because of the nature of the media, giving it users' have more freedom than other media platforms.

3.3.1 The overview analysis of the Science-Buddhism dialogue in Pantip

The debate on Science-Buddhism in Pantip forum had taken place mainly in two discussion sections of Pantip which are called cafes, Wahkor and Sadsana (religion). Wahkor café is for discussing science-related topics; 'Wahkor' is a significant place in the history of Thai science because King Mongkut, the king of Thai science, travelled to Wahkor to watch the eclipse in 1968. The seed posts which start the discussions are monitored by Pantip's moderators to make sure that the threads are in the correct cafes. I found that the seed posts are important given they provide the groundwork for the discussions. The seed posts varied from the members' questions, sharing information from various sources e.g. the members' own thought or knowledge, or quoted texts from newspapers articles, books, and videos from seminars. However, the replied posts may derail from the seed posts.

I used Pantip's search engine using the term 'science' and 'Buddhism' to collect the data. However, Pantip archive does not store every thread in its forums because of the limitations of its server. Pantip allows its members to make decisions on archiving threads. The threads which were voted popular or recommended by the members then are stored in its archive. The practice of selective archiving of the threads can be viewed as a limitation to my study because I was only able to obtain the threads on Science-Buddhism dialogue which were selected to be stored in Pantip archive, and which may not be all of the relevant threads that would be useful to my study. On the other hand, I consider the practice of selectively archiving the threads as an advantage to my search

because the selected threads reflect the active discussion and the selective threads must have been viewed by a number of users. However, it is impossible to estimate the number of users viewing each thread because Pantip does not disclose the figure of page views.

Pantip's search engine is basic; it does not offer any option for searching. The limit of the basic search engine is I cannot refine my search, for instance, when I applied my search terms, the result show all the threads that their messages contain the searching terms which make the result number so high. However, it is not necessary that those are threads focusing on discussing science and Buddhism. The threads could have shown up in the search result because the searching terms, 'science' or 'Buddhism', were stated in the thread. It would be ideal if the search engine offered an advanced search option which allows a searcher to refine their searches. I found that threads' titles and the seed messages in each thread are important since they represent the threads' focal points. Searching within the restrictions of the Pantip's search engine require certain amount of time to refine the search result manually. However, the basic search can be viewed as an advantage because searching by words yields a high number of threads which meant I was unlikely to miss the threads discussing science and Buddhism. However, there were times when the threads' titles or the seed posts did not state the aim clearly. For instance, there are a few threads talking about Charles Darwin's idea on the origin of species and Buddhist's idea which I consider these threads to be the discussions between science and Buddhism although the content of the seed posts did not indicate so.

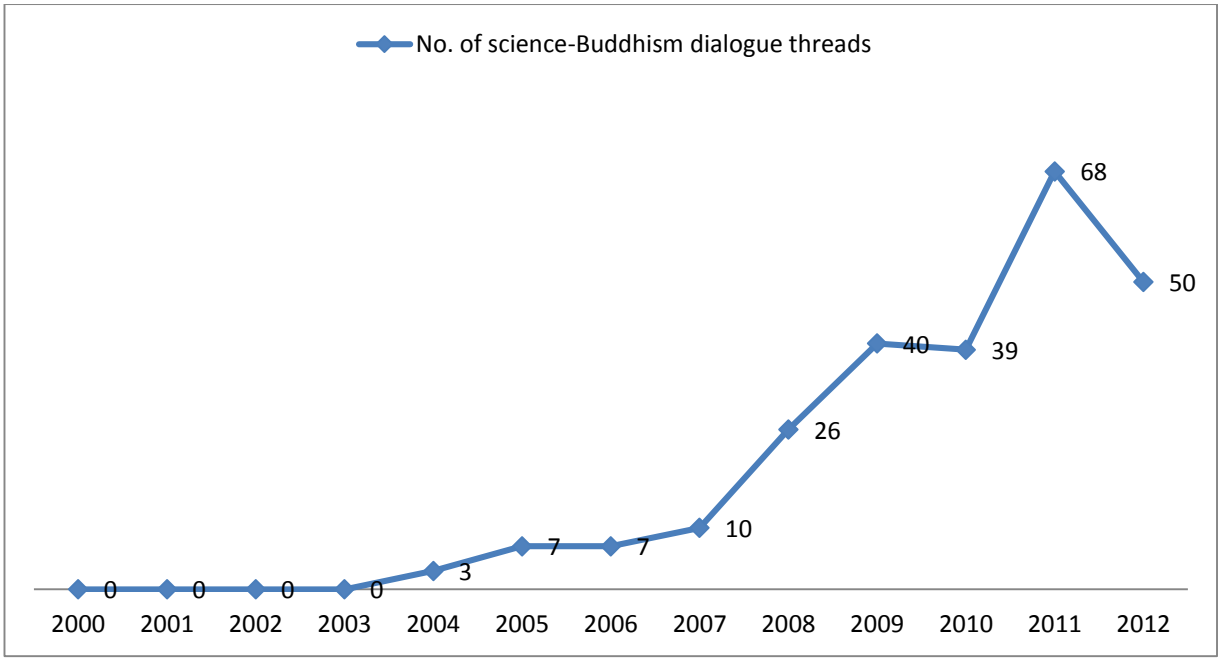

Figure 3.3 – Graph of Science-Buddhism dialogue threads on Pantip online forum

My search found that the discussion of science and Buddhism flourished in Pantip online forum after 2004. Before the 2004, there was no thread on the Science-Buddhism dialogue. In 2004, there were three threads were posted in the Wahkor cafe discussing science and Buddhism. I will elaborated upon these threads as follows. The first thread is posted by the user with nickname, Elrond, in the Wahkor cafe, asking the members whether there is a confirmation by anyone that Buddhism harmonises with science.[222] The thread is not long, only ten posts altogether. The majority of the comments states that Triluk (Three characteristics of existences: Anicca, Dukka and Anatta) is the Buddhist feature that demonstrates that Buddhism is in harmony with science.[223] However, those comments were very brief; none elaborates how and why

[222] Elrond, 'PANTIP.COM: X2763887', 2004. http://topicstock.pantip.com/wahkor/topicstock/X2763887/X2763887.html. [Accessed May 2014] The URL of the thread was no longer available in 2015; it is likely that the thread was deleted from the Pantip's archive.

[223] According to P.A.Payutto's *Dictionary of Phuttatham*: Anicca means impermanence, Dukka means suffering and Anatta means not self. These are the three characteristics of existences which is the core of Buddhist teaching.

they think that Triluk is associated with science; they only answer whether they are agree with the seed post.

Another thread started with the narratives quotes from some popular books and asked what the other users think about the quotes. The thread reads 'Kwamching [Truth]' by Lansaonaipon [A general's grandchildren] began with lengthy quotations from *Thammachad Khong Suppasing [The Nature of Everything]*.[224] Although some users' comment that the seed posts are long and difficult to read but the thread contains eighty-seven posts; eighteen posts belong to Lansaonaipon, a nickname who started the thread. Lansaonaipon had contributed significantly to the thread; not only started the thread but also converses with other users who participated in the thread. As the first post argues that Buddhism and science are compatible as many of scientific findings were proved to be changeable and they are not absolute; the post claims that the Buddha had taught Buddhist regarding the impermanence of existences long before science. Lansaonaipon concludes that the argument is a proof that science cannot obtain 'absolute truth'. This statement is also another argument which often came up in the contemporary popular books on Science-Buddhism dialogue. The participants in the thread can be categorised to two main groups, those privileging science and those privileging Buddhism. The previous group agrees with Lansaonaipon's argument that there is no absolute truth in science which proves what the Buddha had said. The latter disagrees with Lansaonaipon's argument; some comments are quite extreme as they deny any connection between science and Buddhism, particularly by a nickname, 'Practical x 2'. The thread is informative given it talks about some leading theories of

[224] Lansaonaipon, 'PANTIP.COM : X2926554', 2004, http://topicstock.pantip.com/wahkor/topicstock/X2926554/X2926554.html. [Accessed 27 March 2015].

outstanding scientists e.g. Aristotle, Galileo, Newton, Einstein, and Hawking. It is noted that the thread is one of the earliest discussions on science and Buddhism in the Internet forum. It is striking the thread does not value Einstein more than any other renowned scientists, although the content that the participants discuss was on the new physics. Surprisingly, the thread does not mention alleged Einstein's quotation regarding science and Buddhism which seems to be the case in the popular books on Science-Buddhism dialogue which is discussed further later on in this study. Another thread was initiated by a member 'Speed of Light', asking the members if they agree with him that Buddhism is the unified theory.[225] The majority of the replied posts partialy agree with the idea of 'Speed of Light', although they remarked that the statement need to be proved somehow. The thread is not informative since the majority of the replied posts asked for the definition of the unified theory.

In 2005 and 2006, the figure of the threads on science and Buddhism slightly increased. There were seven threads on science and Buddhism dialogue each year. In 2007, the threads on science and Buddhism were raised to ten threads. In 2008, the threads on Science-Buddhism dialogue rapidly increased to twenty-six threads and rose to forty threads in 2009. The threads figure slightly decreased to thirty-nine threads in 2010. The threads on science and Buddhism dialogue rose again in 2011 with sixty-eight threads and decreased to fifty threads in 2012.

I found that the compatibility between science and Buddhism is one of the most controversial topics which stirred the hot debate in Pantip forum apart from the threads

---

[225] Speed of Light, Pantip: X2991169, 2004. http://topicstock.pantip.com/wahkor/topicstock/X2991169/X2991169.html [Accessed

regarding politics. The controversy can lead to discussants using impolite language and being sarcastic. Every thread discussing science and Buddhism had at least one post saying that this kind of question will result in a quarrel. Moreover, there was a thread suggesting that the Sadsana and Wahkor members should have a meeting so the members could become friends. A member who started the thread suggested, 'I noticed the dialogue between these two cafes had become aggressive therefore a meeting might ease up the situation.[226] The thread was so lively with a combination of agreements and disagreements; there were sixty-five comments in the thread. An example of disagreement which is quite strong, 'the Sadsana members think that the Wahkor members whose the majorities are scientists do not understand Buddhism and being closed mind towards Buddhism'. Another example is 'the Sadsana cafe always come up with weird answered'.[227]

My observations suggest that there are two main explanations contributing to the controversy: the members' views towards science and Buddhism; and the different style of the threads in these two cafes. First, the members of these two cafés obviously are interested in different topics. I will show how some quotations from some members' posts reflect the controversy clearly. A thread posted in the Wahkor cafe in 2008 asks directly, 'why science/scientists like to insult religion?'[228] The seed post added that science claims that it can explain everything, e.g. the beginning of the universe, however

[226] DigitalKrash, 'PANTIP.COM : Y11049822', 2010, http://topicstock.pantip.com/religious/topicstock/2011/09/Y11049822/Y11049822.html. [Accessed 27 December 2014].

[227] A comment by a nick name, Chang tor rua in 'PANTIP.COM : Y11049822' Commented on 10 September, 2011.

[228] Ronaldo, 'PANTIP.COM: X7601191', 2009 http://topicstock.pantip.com/wahkor/topicstock/2009/03/X7601191/X7601191.html. [Accessed 27 March 2014]

science does not seem to have all the empirical experiment therefore science is similar to religion'.[229] The thread was one of the longest threads on Science-Buddhism dialogue with 193 posts. The responses varied; some posts answered the question by explaining the controversy between science and Christianity in Europe; some posts said that only extreme scientists would insult religion. The majority of the posts replied that member who planted the seed post only wanted attention more than real answer.

Secondly, there are differences in the threads' styles when debating on science and Buddhism between these two cafes. The posts in the Sadsana cafe were likely to be lengthy and were directly copied without explanations or interpretations from www.8400.org, a website which provides the digitalised *Tipitika* (Pali Canon). On the other hand, the posts in the Wahkor cafe tended to be originally written by its members through their understandings and providing some references, if any. The posts in the Sadsana cafe often are lengthy making them difficult to read; the language also was difficult to grasp. On the other hand, the majority of the Wahkor cafe's posts were written from the members' interpretations and were often are easier to make sense of; they also tended to be kept short. These differences of styles often have been brought up, which could have stirred the heat of the arguments.

The Pantip members are likely to have habits of visiting or participating in specific cafes which are of great interest to them, given Pantip has designed its cafe according to the topic of discussion. My observations show each of Pantip members tends to have a few cafés of their choices although they still visit other cafés; there are a number of regular participants in the threads I have examined, the privileging-science group e.g.

[229] Ibid.

DigitalKrash, and PracticleX; the privileging Buddhism participants e.g. Venture, Baimaibaowiew. I found that members of the Wakhor and Sadsana cafe know each other quite well from the way they refer to each other in some posts. Some members know each other by participation nicknames while some members disclose their real identity e.g. their professions and education as well as their views towards certain topics, particularly the science and Buddhism dialogue. It seems that it is the case in the Wahkor café more than the Sadsana café. The café's atmosphere could have made the members to have sense of belonging to the cafés of their choices. The sense of belonging to their café has also become the sense of protecting the café's perspective which was reflected in some threads.

As mentioned, the Science-Buddhism dialogue in Pantip is one of the topics with substantial interest. Some of these threads' topics were neither informative nor argumentative but they are posted to challenge or annoy some participants. For instance, a thread reads 'what is Phrom kin nguan din? Why the next café (Sadsana café) talks about it very often?'[230] It is noted that 'Phrom kin nguan din' was often mentioned in threads regarding the beginning of the universe. Some Buddhists claim that Phrom kin nguan din story written in *Tipitika* is a Buddhist explanation of the first human being in the world. The majority of the responses to the seed post was sarcasm and comments that it is a tale while some comments argue that Buddhist's teaching is a combination between teaching by empirical evidences and teaching without evidence. Another provocative thread posted in the Wahkor café, asked, 'Can one be ngom-ngai (ignorant)

[230] Kampanum, Pantip.com: X10414131, 2010, http://topicstock.pantip.com/wahkor/topicstock/2011/04/X10414131/X10414131.html, [Accessed 15 September 2014].

because of science?'[231] Most of the response disagreed with the seed post and argued that 'science concerns rationality which opposites to ignorant in itself'.[232] Another post in the thread argued, 'scientific knowledge can be proved; if anything can be proved then it can not be ngomngai.'[233] I found that examining the debates between the Sadsana and Wahkor cafe would shed some light to the Science-Buddhism dialogue in Thailand since it is the media outlet that closely imitates the dialogue in real life. Although Thailand had never have a major conflict between religion and science as is the case in Europe and America, however, these threads on the dialogue demonstrate the substantial interest of Pantip participants, the majority of them being from the middle-class, in the discussion between science and Buddhism. Next I present the topics most frequent discussed in the dialogue.

3.3.2 The topics frequently discussed in Sadsana and Wahkor café

This section shows the core themes in the Science-Buddhism dialogue taking place in Pantip discussion forum. These are the top six topics being discussed in the Sadsana and Wahkor café.

1. The compatibility between science and Buddhism 53 threads (21%)

2. Afterlife, rebirth, heaven, and hell 49 threads (20%)

3. Karma 35 threads (14%)

4. The beginning of the universe, the origin of life and cosmography 32 threads (13%)

5. Einstein 15 threads (6%)

---

[231] Ibid.
[232] Ibid.
[233] Ibid.

6. *Einstein Phop Phraphuttachao Hen* 15 threads (6%)

The rest of the threads are on a wide range of topics, for instance, the evolutionary theory, atom, kalama suttra, and quantum physics. Next I explore these themes.

The compatibility between science and Buddhism

As the figure shows, the theme which was discussed the most was the compatibility between science and Buddhism with twenty-one per cent of the overall threads. The Pantip participants expressed substantial interest in this topic; some of the comments in the threads reflect how frequent the threads being posted, for instance, a user's nickname, 'Hephaestuz', commented, 'this kind of thread appears every day, shall we create a new cafe for science and Buddhism dialogue'.[234] A significant number of these threads started with simple questions e.g. 'Are science and Buddhism the same?' or 'what is the difference between science and Buddhism?' or 'what is the similarity between science and Buddhism?'[235] In addition, there are a few threads initiated with content quoted from books on the Science-Buddhism dialogue; it ended with a question from the participant asking for the other's opinion. For instance, a thread by a user name, Pakpoom, began with a short narrative he quoted from, *Thamma Khue Wittayasat,* by Buddhadasa.[236] The narrative argues that 'Buddhism is science because

[234] swathcu@yahoo.com, Pantip: X9688868, 2010, http://topicstock.pantip.com/wahkor/topicstock/2010/09/X9688868/X9688868.html, [accessed 27 March 2015].

[235] For example, Orojimaru, Pantip: Y8056413, 2010, http://topicstock.pantip.com/wahkor/topicstock/2007/09/X5784557/X5784557.html, [accessed 27 March 2015]. And Pattichasamubata, Pantip: X6565383, 2008, http://topicstock.pantip.com/wahkor/topicstock/2008/04/X6565383/X6565383.html, [accessed 27 March 2015].

[236] Pakpoom. Pantip: X8257180, 2009, http://topicstock.pantip.com/wahkor/topicstock/2009/08/X8257180/X8257180.html, [accessed 27 March 2015].

it tells how to overcoming dukkha'.[237] Pakpoom asked for the other discussants' opinion regarding the argument. The discussion in the thread was very active with eighty-eight posts. The majority, sixty-one posts, disagreed with the seed post while twenty-seven posts agreed that Buddhism is science. The disagreement posts shared the same assertion that science and Buddhism are two separated entities which should not be linked. In contrast, the posts agreeing with the seed post's argument, led by a user with nickname, EvaAngelion. EvaAngelion posted fourteen times in the thread with various evidences to support that Buddhism is science because it had been talking about some scientific knowledge, e.g. the narratives on the cosmology, astronomy, and biology from the *Tipitika*. The threads in Pantip forum had been inspired by the popular books on Science-Buddhism dialogue; some of the books were brought up in the discussions. There were a few books were mentioned in the threads; the most mentioned book is *Einstein Phop Phraphuttachao Hen, Einstein Tam Phraphuttachao Top* and *Thamma Khue Wittayasat*, respectively. *Einstein Phop Phraphuttachao Hen* was referred to the most among these three books which reflects the popularity of both the book and Einstein himself.

Afterlife, rebirth, heaven and hell

The concepts of rebirth, afterlife, heaven and hell are key themes in the Science-Buddhism dialogue discussion, they are the second most discussed Buddhist's teachings after the compatibility between science and Buddhism. There were forty-nine threads

[237] Ibid.

on these topics; it is twenty percent of the threads on Science-Buddhism dialogue in total.

Karma

Karma is one of the core Buddhist teaching subsequently it is one of the most discussed topics by the Pantip participants. There were thirty-five threads on karma, fourteen per cent of the Science-Buddhism threads in total. If adding up these figures, the themes occupy thirty-four per cent of the overall threads on Science-Buddhism dialogue; these themes were the core themes of the Science-Buddhism dialogue. The figure clearly reflects the prominent interest of Pantip users towards these topics.

The majority of the initial posts asked for the other participants' views on karma, rebirth, afterlife, heaven and hell. For example, a post asked 'Do you believe in afterlife? How can you prove it? [238] Some threads asked directly for scientific explanations and proof of these Buddhist concepts.[239] The participants' view toward karma, rebirth, afterlife, heaven and hell can be identified in two groups. The first group is the participants with conventional concept who lay their beliefs on *Traiphum*. [240] As mentioned, *Traiphum* was rationalized, in the mid-nineteenth century in particular. However, it seems that the traditional concepts have embedded in the Thai perspective

[238] Chayutra, Pantip: Y9921332, 2010, http://topicstock.pantip.com/religious/topicstock/2010/11/Y9921332/Y9921332.html, [accessed 10 March 2015].

[239] For example, a thread on karma: Siamstarlian, Pantip: Y7663441, 2009, http://topicstock.pantip.com/religious/topicstock/2009/03/Y7663441/Y7663441.html, [accessed 14 April 2015]., a thread on rebirth: EBussiness, Patip: X4635429, 2006, http://topicstock.pantip.com/wahkor/topicstock/2006/08/X4635429/X4635429.html, [accessed 14 April 2015]

[240] Ibid.

to some extent.[241] The second group is the participants with new interpretation of *Traiphum* e.g. they believe that karma is the outcome of any action; some said that they believe in the equation, 'action = reaction'.[242]

The beginning of the universe

Another key theme in Pantip online forum is the discussions regarding the beginning of the universe and human beings. The majority of the threads discussed the compatibility between scientific explanations of the beginning of the universe and the beginning of Jakkawan (the Thai word for the universe) written in the *Tipitaka*. Those privileging Buddhism often used the Buddhist explanations of Jakkawan and the beginning of being to claim the superiority of Buddhism to science; according to them the *Tipitaka*'s explanations were written more than two millennia earlier than science. The privileging Buddhism users tried to argue that the narrative on cosmography that was written in *Tipitaka* is accurate while the privileging science members disagreed with the privileging Buddhism members. The privileging science members expressed their disagreements with various degrees of disapproval e.g. a member with the nickname, JX, commented that 'the explanation of the universe in *Tipitaka* is very old; it was interpreted and translated many times. Therefore, we can not be sure if it is what the Buddha said. In addition, it is not useful for today'. While another comment reflected a stronger degree of disapproval by commenting that 'some Thai Buddhists are 'pean' (a Thai word means 'nuts' or 'crazy') trying to interpret scientific knowledge to

---

[241] *Triphum* explains the concept of karma in connection with rebirth, hell, and heaven. According to *Triphum*, karma is beings' moral quality of deeds which one has performed during one's life. Karma assigns one's place after death and rebirths.

[242] For example see comment number 14th in Smiling Old Chair, Pantip: X10224696, 2011, http://topicstock.pantip.com/wahkor/topicstock/2011/02/X10224696/X10224696.html, [accessed 14 April 2015].

compromise with some Buddhist teachings'.[243] There are also some moderate comments saying 'arguing about the universe is acintya'.[244] According to these discussants, the Buddha taught his followers that acintya is what is beyond the thinking of human beings since such thinking is not beneficial.[245]

Thus far, I have shown that the Science-Buddhism dialogue in the Pantip online forum is dynamic and demonstrates considerable interest in the Science-Buddhism dialogue. The majority of the discussions are focusing on the compatibility between Buddhism and science. The afterlife, karma, the universe, Einstein's related topics and *Einstein Phop Phraputtachao Hen* were also the key themes in the dialogue. *Einstein Phop Phraputtachao Hen*, played a strong role in drawing attention of the Pantip users to the Science-Buddhism dialogue. The threads regarding the dialogue dramatically increased after the book was launched. The book was first recommended in a thread initiated by a member who did not want to show its nickname in September 2007, a few months after the book was published.[246]

My examination of the Pantip's threads shows that the discussions on the compatibilities between science and Buddhism had created tensions between parties who pro science and who pro Buddhism. Since the majority of the topics discussed are abstract rather than empirical topics e.g. karma, rebirth, afterlife, and heaven and hell hence being abstract made them argumentative. The science and Buddhism dialogue

---

[243] Darth Prin, Pantip.com : X12591118, 2012. http://topicstock.pantip.com/wahkor/topicstock/2012/08/X12591118/X12591118.html, [accessed 3 March, 2015].

[244] ibid

[245] ibid

[246] 9, Pantip: X5805090, 2007, http://topicstock.pantip.com/wahkor/topicstock/2007/09/X5805090/X5805090.html, accessed 3 March 2015.

shares one core character with the religion and science dialogue regarding the abstract of the issues being discussed. Baker's survey on the American's perception of the dialogue between science and religion, concludes that 'the discussions tend to focus on philosophical, abstract, and/or polemical, rather than empirical issues.'[247] However, the significant difference between these two dialogues is the science and Buddhism dialogue focuses on demonstrating the compatibilities between scientific knowledge and Buddhist teachings with conclusion that Buddhism is superior to science hence the aforementioned knowledge had been discovered by the Buddha before science. While the dialogue between science and religion's focal point is the incompatibility between science and religion.[248]

This study is beneficial from the investigation of Pantip forum as it is the only medium among the three media that reflect the middle-class's views whereas other media could not. My examination shows that the participants in the Science-Buddhism dialogue can be classified to three main groups according to their views on the Science-Buddhism dialogue: the privileging science group, the privileging Buddhism group, and the neutral group. The privileging-science group are the participants who tend to oppose the attempts to claim the compatibility between science and Buddhism. These participants expressed two major views against the attempt to claim the compatibility, first, according to the pro science group, some pro Buddhism participants made their claims by 'cherry picking' and twisting the *Tipitaka* to support their claims. Second, although the privilege science group may criticise the pro Buddhism group, however,

---

[247] J O Baker, 'Public perceptions of incompatibility between "science and religion"', Public Understanding of Science. Vol. 21, 2012, pp. 340–353.
[248] Ibid.

they do not oppose Buddhism as they state that Buddhism is great without the need to be validated by science.

The privileging Buddhism group try to claim the compatibility between science and Buddhism in many aspects. The privileging Buddhism group accused the privileging science group of not thoroughly understanding Buddhism which makes them unable to see the harmony between science and Buddhism. The privileging Buddhism participants tended to express strong views and criticisms of science e.g. 'science can not explain everything while Buddhism can do so.'[249] Another extreme view expressed, 'if you are Buddhist you must believe in these concept, otherwise you are not a Buddhist.'[250] The third group in the dialogue holds a neutral view towards the Science-Buddhism dialogue; some participants said that the dialogue is interesting and they enjoyed reading the threads. Some participants with neutral view commented that although they are not so sure whether there is heaven, hell, or afterlife but there is no harm to stay on the safe side by behaving well. Therefore, if it turns out that the afterlife, heaven, or hell exists then they would be assigned to a good place according to their good deeds.

3.4 Discussion

This chapter demonstrates the integral role of the Science-Buddhism dialogue in science communication in Thai landscape and how the dialogue has become a significant interest to the middle-class. To demonstrate the prominent role of the dialogue, I examined three media poplar books, newspapers, and Pantip online forum.

[249] Orojimaru, Pantip: Y8056413, 2010.

[250] Smiling Old Chair, Pantip: X10224696, 2011.

My main findings are on the Science-Buddhism dialogue, particularly in print media, has been used as a counter reaction to the Western power. Buddhism was referenced in the dialogue as an indigenous entity that is superior to science. My examination shows that the dialogue flourished when the middle-class's fear of the Western power surged. It is strongly demonstrated in three cases, first the mid nineteenth century when the Thai monarchs concern about the colonialism hand in hand with the American missionaries' missions to convert Thai Buddhists. Second, the 1960s when the US had strong influence over Thailand. It has given financial aids and assisted with infrastructure establishments. Moreover, the US had launched a popular science books project, Seriphap, a project translating, publishing the books and launched on the market with subsidised prices. Third example is the last decade of the twentieth century when the concept of globalization has been widespread internationally, Thai intellectuals were wary of the globalisation.[251] Later on Thailand faced the Economic Crisis of 1997 or Tom Yum Kung crisis, brought strong criticism of the consumerism and materialism regarded as originated in the West. Following these difficult circumstances, the King's concept of 'sufficient economy' has been adopted to be the 'country's development and management philosophy.'[252] The concept of 'Buddhist economics' by P.A. Payutto was another concept brought to light in that period, although he first introduced the idea in his public lecture and published the book in the same year in 1988.[253] Some leading Thai social critics e.g. Sulak Sivaraksa, and Seri

[251] C. Reynold, 'Globalisation and Cultural Nationalism in Modern Thailand' in Kahn S. (ed.), *Southeast Asian Identities: culture and the politics of representation in Indonesia, Malaysia, and Thailand*., Singapore, The Institute of Southeast Asian Studies, 1998, pp.115-145

[252] The ninth National Social and Economic Development Plan (2002-2006), p.1

[253] P.A.Payutto. Buddhist economics. Bangkok: Buddhadamma Foundation Publications, 1988.

Phongpit urged Thailand and her people to return to their traditional roots.[254] The popular account of the Science-Buddhism dialogue also proliferated, as I have discussed. Another internal context that correlates with the flourish of the books on Science-Buddhism dialogue is the boom of popular books on Buddhism. Although the external factor cannot be overlooked in the boom of the Science-Buddhism dialogue with Einstein as the core theme in the last two decades since at the time there were two main international celebrations regarding Einstein.

This chapter has shown that the Science-Buddhism dialogue was first used as a tool to encounter with the West by the elites (King Mongkut and his noblemen) in the late nineteenth century, the dialogue has become the middle-class's interest and they played an active role in the dialogue via two media, popular books and the Internet.

The proliferation of the Science-Buddhism dialogue can be understood as an attempt to counteract the West that some Thai feared as a threat although at the same time they do not completely deny the West or modern science. However, as the majority of Thai are nationalistic because of the nationalism ideology being established through various propaganda over a long period e.g. the respect Thai pays to the national anthem every day, and the depictions in the history Thai learns at school, some of the middle-class Thai perhaps feel that their country is rather better than other, their religion, Buddhism is also the superior to other religions as they tried to argue in the Science-Buddhism dialogue. My finding is accomplished with other scholars' discussions on Thai

[254] S. Sivaraksa, 'A Buddhist Democracy', online article published on his own website, http://www.sulaksivaraksa.org/en/index.php?option=com_content&task=view&id=137&Itemid=77, [accessed 21 December 2012].

studies widely discussed on the 'cultural nationalism' embedded in Thai society.[255] The middle-class also expressed strong interest in Buddhism as Buddhism books were listed as best sellers. These are the internal contexts that fuel the proliferation of the dialogue as a counteract to the western influence.

My examination demonstrates that among the three media: popular books, newspapers, and Pantip online forum, newspapers were the least among the three media that covered the Science-Buddhism dialogue. However, the majority of the articles were on *Einstein Phop Phraputtachao Hen.*An explanation is that the Science-Buddhism dialogue is a niche topic while the Thai newspapers are likely to cover mass topics as they aim at the mass population. Moreover, generally Thai newspapers presented scientific information at the maximum of 4.5 per cent of it total, as discussed in Chapter 2. Pantip provides a distinctive environment for the debate, for bringing people with different background to debate which could not be easily arranged in real life. The majority of the threads in Pantip, Sadsana and Wahkor café, tended to be taken from the popular books on the Science-Buddhism dialogue genre, although the Pantip online forum is newest media and gives the most freedom for the public to express their opinions. As shown above Pantip forum discussed various key themes; the varieties are wider than the key themes in popular books on Science-Buddhism dialogue. From my point of view, the varieties of the Science-Buddhism themes discussed in Pantip online forum reflect the opportunity which the Internet offers to users. The Internet as a new media give the freedom to the public to talk, express and participate their view and

[255] C. Reynolds, *National identity and its defenders: Thailand today,* Chiang Mai, Thailand: Silkworm, 2002.

exchange them with the other. The opportunity is distinctive to the online discussions forum since other traditional media outlets e.g. books, newspapers, and television have ownerships and restricted audience participation.

The key themes in the Science-Buddhism dialogue in three selected media, popular books, newspapers, and Pantip online forum share some common themes. From my examination of the Science-Buddhism dialogue in these three media, I draw a conclusion that the major themes in the dialogue remain static from the first book on the genre, *Kitchanukit*, to the books published in the boom of Einstein era in the first decade of the twentieth-first century. Although books published in the latter period have added some more themes on new physics, however, the previous themes remain. There are three key themes in the dialogue remaining from *Kitchanukit*: Mind and material concern, Karma, and Kalama Sutta. These are core teachings in *Tipitaka*.

My examination suggests that the dialogue often shows the compatibilities between science and Buddhism; the dialogue identifies the similarities between scientific knowledge and Buddhist teachings then emphasising that the Buddha had foreseen the knowledge more than two thousand years earlier. The only theme that identifies the differences and criticizing science's weak aspects is that science tends to promote the materialistic while Buddhism aims to overcome suffering. This is the strong aspect of Buddhism the dialogue tries to illustrate to enlarge the superiority of Buddhism.

As shown, Science-Buddhism dialogue has been discussed in the popular account, although it is still in the elite domain. The dialogue often contains not much of intellectual elements; the academic's involvement in the dialogue is relatively small

compared to the dialogue of science and religion in the UK or the US, although there are several scholars who wrote the popular books on the theme. The absence of the scholarly discussions in the Science-Buddhism dialogue, although with a few exceptions of P.A. Payutto's book, has shaped the dialogue to be rather shallow. The practice has significantly shifted after the 2000s when the new theme arises, the indigenization of Einstein. The dialogue has been joined by a number of authors and publishers– one of the motives could be financial.

My examination of the Science-Buddhism dialogue in the popular books, newspapers and Pantip's threads suggests that perhaps to some extent, some middle-class Thai believe that they do not need Western science since they already have Buddhism which to them is science as some would argue that Buddhism is better than science in a few aspects. Perhaps it is the reason why Thai are happily welcoming technology and tend to keep up to date with technology but they are cold to science as according to the Thai government's view.

Chapter 4

The Popular Account of Einstein in Thailand.

Einstein is arguably the most well-known international scientist in Thailand, based on the relatively significant number of popular books on him. Moreover, Einstein has become a symbol or trademark for educational and creative businesses; he was used as a symbol of 'adchariya (genius)' e.g. advertising company, tutoring school, and music collection for babies, and his quotations and photographs were printed on publicity material for Thai Science Week, including free postcards and bookmarks.

This chapter investigates the popular account of Einstein, drawing on popular books, newspapers, and Pantip online forum. I explore the prominent role of Einstein in Thai society. How has he become the most recognized international scientist in Thai society? Why has the middle class Thai chosen him to further the science-Buddhism dialogue rather than other scientists? How does the Thai phenomenon fit in with Einstein's status as an international celebrity? These questions will help reveal the main characteristics of science communication in the Thai landscape.

I compare the coverage of Einstein with the coverage of three renowned international scientists: Newton, Darwin and Hawking. I will establish Einstein's depiction by conducting a qualitative analysis to demonstrate the key themes in the books and to demonstrate the representation of Einstein in Thai society.

As a continuation of the key findings established in Chapter 3 on the significance of the science-Buddhism dialogue in Thai society--wherein one of the key findings is the outstanding popularity of Einstein in particular books published between the 1990s-

2000s---this chapter, investigates the depictions of Einstein in Thai media outlets in an aim to understand how Einstein had become one of the most recognized international scientists in Thailand.

4.1 Einstein in popular books

In this section, I, first, explore the coverage of Einstein in popular books; second, I conduct a comparative analysis between Einstein's coverage and that of other well-known scientists. By comparison, I will be able to demonstrate the high profile of Einstein in Thai popular account.

4.1.1 The coverage of Einstein in popular books

This section begins with the list of popular books on Einstein, from the first popular book on him up through the 2000s. The popular books on Einstein will be separated into two periods: books published between the 1960s-1980s, and the 1990s-2010s; the books published in these two periods vary significantly. The books published in the prior period were translated from English books while Thai authors wrote the majority of the books published in the latter period.

Table 4.1: The popular books on Einstein published between the 1950s-1980s

1961-1970	1) Apon Chatburut. trans. Gillian Freeman 1965, 1971, 1992 *Albert Einstein (The Story of Albert Einstein)*. Pra Nakorn, The National Research Council of Thailand (NRCT). 2) Arun Ratchatanawin. trans. Lincoln Barnett. 1970, 1973, 1976, 1982 *Ekkapop Lae Doctor Einstein (The Universe and Dr. Einstein).*

1971-1980	1) Suwit Chavadet. trans. James A. Coleman. 1974. *Thitsadi Samphattaphap [Relativity for the Layman]*.
1981-1990	1) Kumpon Sritanom. trans. Albert Einstein. 1981, 1989. *Khian Wai Muea Pen Mai Klai Fang: Thassana Wa Duai Sangkom Lae Kanmueang* (*Out of My Later Years Albert Einstein, Einstein's View of Life, Society and Politics).* 2) Rangsima Licharoenchai trans. Joseph Schwartz. 2nd edition 1985. *Albert Einstein Chabap Katoon. (Einstein for Beginners)*.[256]

As shown above Einstein and his theories appeared the first time in popular book in 1965, *Albert Einstein*, Thai translation of the English-language original, *The Story of Albert Einstein*, originally written by Gillian Freeman and published in London in 1960.[257] Another book on Einstein was published five years later in 1970, *Ekkaphop lae Doctor Einstein [The Universe and Dr. Einstein]*;[258] this book seems to have been quite popular given it was reprinted a few times after it was first published in 1970 with 3,000 copies, in 1973 and 1976 it was reprinted with 2,000 copies each time.[259] After the third reprinting, the publisher stated that the book was sold out and that there was still some demand for the book, so it was reprinted again for the fourth time with 2,000 copies.

[256] The information on the first publication of the book can not be revealed since the earliest copy of the book that is available is the second edition which was published in 1985. Presumably the first edition could have been published in Thai version sometime from 1979-1985 since the original version was published in 1979. It is noted I have searched from all major libraries in Thailand including the Thai National Library, Chulalongkorn library, Thamasat library, and Mahidol library.
[257] Arporn Chatburut. trans. Gillian Freeman. *Albert Aisatai* (*The Story of Albert Einstein)*. 1965. Pra Nakorn, The National Research Council of Thailand (NRCT).
[258] Arun Ratchatanawin. trans. Lincoln Barnett. *Ekkapop Lae Doctor Einstein (The Universe and Dr. Einstein).* 1970. Pra Nakorn. The National Research Council of Thailand (NRCT).
[259] Ibid. Preface with no page number.

The book was translated by a leading Thai scientist, Professor Arun Ratchtanawin, who had received his M.A. from Western Michigan University in the US; the publication was edited by Professor Sippanon Khetthad, Ph.D.

In the 1970s, only one popular book on Einstein was published, *Thitsadi Samphattaphap [Relativity for the Layman]* was published in 1974.[260] The book was reprinted at least eight times, and although the number of copies from each reprint is not stated, it could be presumed that the book was one of the important early works on Einstein in popular accounts and may eventually prove to be considered a classic book in the Thai language. Chavadet has also written a few other books on Einstein and physics.[261]

The first two popular books on Einstein, published in the 1960s, were supported by the NRCT's translation project with assistance of the USIS. The NRCT's publishing of Einstein's biography and work was a distinctive practice because during the same period, the project was focusing on publishing general topics rather than scientific knowledge e.g. American politics, agriculture, economics, and dental health. Moreover, the NRCT did not publish any other scientists' biographies in the same period.[262]

It is possible to conclude that Einstein was first introduced in the Thai popular account by the US. There is no document available to consult regarding the decision that the NRCT had made to publish books on Einstein at the time and why the NRCT's

[260] Suwit Chavadet. trans. James A. Coleman. 1974. Thitsadi Samphattaphap [Relativity for the Layman]. Pra Nakorn: Chomrom Karnsuksa, Faculty of Science, Chulalongkorn University.
[261] For example, Suwit Chavadet. 2003. Physic Kartoon [A Comic of Physics]. Smith: Bangkok; Suwit Chavadet. 1998. *Kod tang Physics lae Thissadee Samphattaphap [Physics Law and the Theory of Relativity].* Smith: Bangkok.
[262] For a list of NRCT's translation project' titles. http://www1.nrct.go.th/tfrd2012/file_06.pdf [accessed 01 April 2015].

committees decided to publish books on him. However, considering the context could offer some light on the selective decision. First, these books were published and translated by the NRCT but their copyrights were held by the USIS (The United States Information Services). Second, the NRCT was established by Americans; it was one of the fundamental programs of Thailand that the Americans assisted the Thai government in setting up in the 1950s when Americans had strong influence over Thailand.[263] Presumably the US and the NRCT had close connections, hence the USIS obtained the books' copyrights in the NRCT's translation project. Moreover, the USIS itself had its own propaganda project through translation of some American books. Therefore, it is possible that the choice of translating books on Einstein could have served the USIS propaganda project as well. More importantly, in the second decade of the twentieth century, Einstein became a celebrity in the media as the scientist in the US who proved his Theory of Relativity.[264]

Moreover, the prologue of *Albert Einstein*, written by the secretary of the NRCT, stated that the science committee of the NRCT selected to publish the book aiming at raising awareness of the great scientist's life among Thai youths; Einstein's stories could encourage the youths to follow Einstein's path. He adds 'the publication could help Thai youths become aware of the real purpose behind the invention of the atomic bomb, it

---

[263] The Thai Research Federation was established in 1956. Its name was changed to 'The National Research Council of Thailand' in 1972, and its duty was to advise the government regarding research and offer funding to research in various fields. However, at the beginning, its objective was to accommodate scientific research.

[264] See the detail in, Marshall Missner, 'Why Einstein Became Famous in America', *Social Studies of Science*, 15, (1985), 267-291.; Friedman, A., & Donley, C. 1985. *Einstein as Myth and Muse*. Cambridge [Cambridgeshire: Cambridge University Press.

was for peace not war.'[265] To a certain extent, it could be said that the US has indirectly introduced Einstein to the Thai popular accounts.

In Chapter 3, I consider the Seriphap project by USIS as playing a role in the boost of the science-Buddhism dialogue books in the 1960s. In this section, I reflect that in some measure, the Seriphap project by USIS was also a significant factor in the flourishing of the popular science book market in the mid twentieth century Thailand in two aspects. First, the Seriphap project tended to have stimulated the publishing of the popular science book, particularly the popular books on scientists' biographies significantly increased. Second, the science fiction books written by Thai authors also thrived. Here I briefly provide an overview of the USIS's Seriphap project. The USIS (the name used in countries outside the United States), established in 1953, was called the United States Information Agency (USIA) in the US. The agency's work was carried out by Foreign Service Officers assigned to USIS posts in almost all US embassies around the world.[266] Its mission was to 'understand, inform, and influence foreign publics in promotion of the US national interest, and to broaden the dialogue between American and US institutions, and their counterparts aboard.'[267] The USIS motto was 'telling America's Story to the World.'[268] In order to achieve its mission, the USIS operated several services through its centres, for example information resource centres, Cultural Affair centres, and Voice of America (VOA).[269]

---

[265] Arporn Chatburut. trans. Gillian Freeman. 1965. *Albert Aisatai* (*The Story of Albert Einstein)*. p.1

[266] The Publication produced by the United States Information Agency's Office of Liaison; available online at http://dosfan.lib.uic.edu/usia/

[267] Ibid

[268] N. J. Cull. The Cold War and the United States Information Agency: American Propaganda and Public Diplomacy, 1945-1989. p. 1

[269] The Voice of America (VOA) radio station remains active and still broadcasting in Thailand today.

The USIS popular books project in Thailand was named 'Seriphap [freedom].' Although it is impossible to consult any document regarding how the choice of project's title was made, it reflects the American's propaganda to bring peace to the South East Asian region, although at the time, the American had set its military base in Thailand.[270] The USIS's book translation projects aimed to share and disseminate the American's ideology to the other counties since the books were carefully selected to 'meet the government's propaganda needs.'[271] The selection process was conducted by choosing already published books rather than commissioned work written specifically as propaganda. This way the books published in the project were the same ones that Americans were reading at home.[272] The books published by Seriphap project also were subsidised to be as cheap as a glass of soft drink.

It is difficult to precisely identify how many books were published in the Seriphap series because there is very little literature on it and the Seriphap project has been discontinued. Some secondhand bookshops' websites have obtained some titles published in the projects which are my main sources. I contacted the US information centre in Bangkok, they do not have information on the book series but instead hold a

---

[270] The USIS states that the program helped to make the literary works, scholarship, and opinions of American writers, past and present, available to educators, business professionals, researchers, and a vast book-reading public around the world. The program operated throughout Asia, the Middle East, Latin America, Africa, and many parts of Europe, and, in conjunction with local publishers, produced American titles in Chinese, Czech, Indonesian, Mongolian, Bengali, and many other languages. The publications translation program facilitated the publication and dissemination of hundreds of thousands of American books covering subjects such as American history and government, political science, economics, law, education, business administration, biography, environmental science, literature and literary criticism, and communications. Source: The Publication produced by the United States Information Agency's Office of Liaison; available online at http://dosfan.lib.uic.edu/usia/ and Nicholas J. Cull. *The Cold War and the United States Information Agency: American Propaganda and Public Diplomacy, 1945-1989*. p. 25

[271] J. B. Hench. Books as Weapons: Propaganda, Publishing, and the Battle for Global Markets in the Era of World War II. 2010, Ithaca, N.Y., Cornell University Press, p. 94

[272] Ibid, p. 99

collection of magazines called 'Seriphap'. The Seriphap published at least eighty titles of selected American novels; the themes varied from American history, politics, science, and inventors biographies.

Einstein has received significant attention in the Thai popular account since the book on him was introduced. At the time when Einstein's biography was published, other great scientists' biographies and theories were often published as chapters in a collection while Einstein's biography was individually published. The examples of those books are *Prawat Wittayasat lae Chewaprawat lae Phon-ngan khong Nakwittayasat Samkuen [History of Science and some Important Scientists' Biographies]*, *Chewaprawat Nak Wittayasat [The Scientists' Biography]* and *Nak Wittayasat Samkhan Khong Lok [The Outstanding World Scientists]*.[273] These books cover short biographies of significant scientists, and one way of interpreting the practice is that to certain measure, the publishers/ authors considered Einstein's stories to be able to attract more attention from readers than other scientists.

As shown, the period of 1960-1980s witnessed the introduction of Einstein in the popular account with selective titles being translated to Thai language, none of the books were originally written by Thai authors. To a certain extent, it reflects that none of Thai authors were confident to write about Einstein's theories. In addition, perhaps at the time, Thai physicists were not interested in writing popular books. The implication that Einstein's Theory of Relativity is very difficult to comprehend perhaps even to

[273] J Siriboonrod. 1961. Prawat Wittayasat lae Chewaprawat lae Phon-ngan khong Nakwittayasat Samkuen [History of Science and some Important Scientists' Biographies]. Suekarnka:Thonburi; Boontrung Sarawut trans. A.V. Howard. 1969. Tamnuep Chiwaprawat Nakwittayasat Eak Khong Lok [The Directory of the World's Greatest Scientists]. Pranakorn: Kriangsak Pisnaka. 1969. Nak Wittayasat Samkhan Khong Lok [The Outstanding World Scientists]. Bangkok.

physicists is discussed elsewhere. For instance, Missner claims that there were only twelve persons in the world who understood the Theory of Relativity, and this is one of many aspects which contributed to Einstein's fame.[274] The practice began to change as late as nearly the end of the 1990s, when Thai authors, including a few scientists, began to write some original popular books on Einstein, which is discussed in the next section.

I found that the main themes of the translated titles regarding Einstein published between the 1960s-1980s are Einstein's biographies and his perspective on varied subjects rather than his theories. His own books on his theories e.g. *Relativity, The Special and General Theory*, have never been translated and published in Thailand until the present. Einstein's own book, *Khian Wai Muea Pen Mai Klai Fang: Thassana Wa Duai Sangkom Lae Kanmueang [Out of My Later Years Albert Einstein, Einstein's View of Life, Society and Politics]* was translated in 1981.[275] The book was reprinted a number of times by different publishers since its initial publication, proving to be one of the most popular books on Einstein. It is certain that the practice of translating books on Einstein was a selective process, although it cannot be said that the purpose of the selective process relied upon making profits, since I have discussed that some of the books were published with subsidisation from the government's department. However, the selective practice tends to reflect the publishers' view toward the readers e.g. readers may not be interested in the genre.

---

[274] Missner. 1985. pp.275-276

[275] Kumpon Sritanom. trans. Albert Einstein. *Khian Wai Muea Pen Mai Klai Fang: Thassana Wa Duai Sangkom Lae Kanmueang [Out of My Later Years Albert Einstein, Einstein's View of Life, Society and Politics].* Tonmak: Bangkok. 1981.

Perhaps one explanation is the establishment of science in Thailand is relatively delayed. Einstein was not introduced to the Thai public until late 1960s after he had already passed away. While some other countries in Asia e.g. China and Japan, have been engaged with the new physics and Einstein since the early part of the century. In the case of China, Einstein were introduced rather early as his Theory of Relativity was first introduced and discussed during the May Fourth Period (1917- 1921).[276] Moreover, as early as 1920s Einstein's Theory of Relativity was published in at least three journals in China.[277] In 1922-23, Einstein toured Asia; he visited a few countries e.g. China and Japan. Einstein had come close to Thailand as he visited Singapore, however, there is no record of Thailand involved in the tour. Hence, I could conclude that while the US and some other Asian countries were fascinated by Einstein and his discoveries, the Thai public had not yet become familiar with Einstein, until a hundred years later in 2005 he has become a familiar face and arguably the most well-known scientist in Thailand.

Another aspect worth discussing is what the fame of Einstein is based upon. The literature tends to suggest that the public's fascination toward Einstein's theories greatly contributed to his fame – although the media played a great role in his fame. In China, a Chinese scholar claims that 'Chinese people's interest in Einstein was mainly in his scientific theories, the Relativity Theory in particular.'[278] It reflects that the Chinese's interest in Einstein is significantly different from those of Thai. As I argue, Thai's interest toward Einstein, focuses on his connection to Buddhism and his indigenization rather

---

[276] Danian Hu. *China and Albert Einstein*. Cambridge, MA: Harvard University Press. 2005.

[277] Bing Liu. 'Some Historical Analysis of the Translating, Editing, and Publishing Process of the *Collection of Albert Einstein* in China'. *Synthesis Philosophica*, 42(2), 2006, pp.285-298.

[278] Liu. p. 285.

than his theories, the core themes of popular books in the 1960s-1980s. I examine the core themes of the popular account in popular books published after the 1990s to confirm my argument.

Table 4.2: The popular books on Einstein published in the 1990s-2000s.

1991-2000	1) Kirana Lueanghiran. trans. Macdonald Fiona. 1996. *Albert Einstein: Nak Fisik Ti Mai Thammada, Phu Sadaeng Titsadee Sampattapap an num pai su kan Patiwat Khamkid Kiao Kap Akkapop Tang Mod (Albert Einstein: Amazing scientist)*. *2)* Nuantip Suppaprakan. trans. Hitochi, Takeuchi. 1996, 1998. *Albert Einstein: Pu khonpop raboed Paramanu [Albert Einstein who invented Nuclear Bomb]*. 3) Itti Ruetapon. trans. Watanabe Masa-o, Inukami Hirichi, Yamamoto Kikuo. 1997. *Adchariya Aisatai (Einstein is genius).* 4) Krongpaen Chaichanasan. edit. 1999. *Chewaprawat Albert Einstein [Albert Einstein Biography].* *5)* Anchali Wisetsang. edit. 1999. *Einstein Kap Thitsadee Sampattapap [Einstein and the Relativity Theory]* 6) Chaiwat Khuppratrakul. 2000. *Einstein Phu Phlik Chaakkawan [Albert Einstein: Who Spin the Universe].*
2001-2010	1) Wongchai Kaewpuangkham. edit. 2001. *Roi Paed Wata Einstein (A Myriad of Einstein's Words)*

2) Sak Bawon. trans. 2002. *Albert Einstein Nai Thatsana Phong Phuean (Albert Einstein: from Friends Views)*

3) Chakhit Worachayangkul. 2002. *Albert Einstein Nangwittayasat Ek Khong Lok [Albert Einstein: The World's Most Outstanding Scientist]*

4) Ban Witthayasart Club. 2003. *Albert Einstein Chao Khong Thitsadee Sampattapap [Albert Einstein : The Relativity Theory's owner]*

5) Tanu Kaewopat. 2003. *Aisatai Nai Putthapratya (Einstein in Buddhism Wisdom)*.

6) Sak Bowon. 2004. *Aisatai kap Phuttha: pratchaya khukhanan thi banchop phopkan [Einstein and Buddhism: the Convergent Parallel]*. Nonthaburi: Samnakphim Samit.

7) Tanu Kaewopat. 2004. *Eakkapop Khong Aisatai (Einstein's universe).*

8) Rawheem Pramat. trans. 2004. *Kao Pon Krop Einstein (Beyond Einstein)*

9) Kaku Michio. Sawang pongsiripat. trans. 2004. *Nuea Miti Ti Si Khong Einstein (Beyond Einstein: the cosmic quest for the theory of the universe).*

10) Jetsada Tongrungroj. 2005. *Albert Einstein: Manut Lae A-pi-manut (Albert* Einstein; Human and Superhuman Sides). Bangkok: Sukkhaphapjai

11) Nimit Teerakul. 2005. *Albert Einstein Kap Fan Sud Tai Ti Klai Pen Ching (Albert Einstein's Last Dream).* Bangkok: Directionplan.

12) Ploy Jones. trans. Mike Goldsmith. 2005. *Albert Einstein Kap Chakkawan Yued Hod (Albert Einstein and his inflatable universe).*

13) Janpoom, K. 2005. *Albert Einstein Yod Adchariya Tang Physic (Albert Einstein: Physics Genius)*

14) Chaiwat Khuppratakul. 2005. *Chak Einstein Thueng Hawking (From Einstein to Hawking).*

15) Yupha Wanichchai. 2005. *Aisatai lae samphatthaphap thuaipai [Einstein and the Theory of General Relativity]*. Chonburi: Rongphim Burapha.

16) Anat Lemukkadet. trans. David Bodanis. 2005. *E=mc^2 Chewaprawat Kong Samakan Satan Lok (E=mc2: a biography of the world's most famous equation*).

17) Buncha Tanaboonsombut. Suthat Yoksan, and Chaiwat Khuppratrakul. 2005. *Einstein: Nueng Sattawat Heng Pi Mahatsachan (Einstein: One Decade of the Miracle year).*

18) Rojjana Nacharoen. 2005. *Faemlap FBI lae Einstein (The Einstein file).* Bangkok: Matichon.

19) Buncha Tanaboonsombat. 2005. *Fan Pan Tae Einstein [A Huge Fan of Einstein].*

20) Sakda Siripun. 2005. *Kae Roi Einstein (1) (Einstein: Life and Success(1)).* Bangkok: Dansuta Kanpim.

21) Siripong Witthayawirot. trans. Alan Lightman. 2005. *Khamfan Khong Einstein (Einstein's dreams).* Bangkok: Matichon

22) Teeron Matchima edit and trans. 2005. *Khwamchueaman Lae Satta Yam Plai Chiwit Albert Einstein [Faith and Trust throughout the later year of Albert Einstein.*

23) Sompon Palakonkun. 2005. *100 Pi Albert Einstein [100 years of Albert Einstein].* Bangkok: Chomromdek.

24) Prayong Kongmuang, and Panbua Bunpan. 2005. *Raengbandanchai Chak Albert Einstein (Einstein: My Inspiration).* Bangkok: Matichon.

25) Prayong Kongmuang. 2005. *Jintanakan Samkan Kwa Kwamru (Einstein's quotes).* Bangkok: Matichon.

26) Suppawan P. Green. 2006. *Einstein Tam Phraputtachao Top (Einstein Questioned, Buddha Answered).* Bangkok: Freemind.

27) Sakda Siripun. 2005. *Kae Roi Einstein (2) (Einstein: Life and Success(2))* Bangkok:Dansuta Kanpim.

28) Som Sujira. 2007. *Einstein Phop, Phraputtachao Hen [Einstein Found, Buddha Had Seen].* Bangkok: Amarin.

	29) Sawang Pongsiripat. trans. Michio Kaku. 2007. *Chakkawan Khong Einstein (Einstein's Cosmos: How Albert Einstein's Vision Transformed our Understanding of Space and Time).* *30)* Pairat Tadchayapong. 2007. *Einstein Lumdam Lae Big Bang (Albert Einstein: Black Hole and Big Bang).* 31) Chittraporn Tunrattanakul. trans. Joseph Eger. 2007. *Violin Kong Einstein (Einstein's Violin).* 32) Akkara Suppachet. trans. 2008. *Panyayan khong Einstein [Einstein's Intuition].* 33) Buncha Tanaboonsombut. 2009. *Samphattapap Sud Yod Moradok Tang Khwamkhid Khong Einstein [Relativity Theory: The Most Precious Heritage from Einstein].* 34) Hem Yanwiro. 2010. *Bangsing thi na siadai-- 'Aisatai mai khoei phop tae Phraphutthachao hen [Some disappointing that Einstein Never had Discovered but the Buddha Had Seen].* 35) Som Sujira. 2010. *Einstein Pop, Phraputtachao Hen II [Einstein found, Buddha had seen II].* Bangkok: Amarin.

As shown in Table 4.2, the popular publications of Einstein was an upward trend in the 1990s, as two books in the 1980s increased to six books in the 1990s, and the figure rapidly rose in the 2000s when thirty-seven books on the theme were published. The 2000s proved to be the Einstein boom in Thailand. The following decade witnessed

a significant number of books on Einstein written by Thai authors. It is noted that it took nearly a century after Einstein had discovered his theories before some Thai authors wrote some popular books on the theories. The delay in authoring and publishing popular books on Einstein's theories by Thai authors was a result, to some extent, of the belated developing in the understanding of the new scientific discoveries.

Next I will show the characteristics and key themes in the popular books on Einstein published between the 1990s-2000s.

More books originally written by Thai authors

As discussed, popular books on Einstein published between the 1960s-1980s were all translated from other languages. Another major shift in the publication on Einstein was the characteristics of the authors, in the 2000s a substantial number of Thai authors had written the books on Einstein which was not the case for the genre books published before the 2000s. In the 2000s, thirteen out of thirty-seven books in total were written by Thai authors. In total, it was approximately thirty-five per cent of the popular books on Einstein, and this increasing number of the Thai authors writing about Einstein was a promising sign for the Thai government's aim to encourage the public's interest in science.

Internationally, physics had a 'revolution' in the early twentieth century as some countries, such as: the US, the UK, Germany, Japan, and China were celebrating Einstein's discoveries. Thailand did not take any part in the celebration until a hundred years later. In 2005, the world celebrated Annus Mirabilis, Einstein's 'Miracle Year' when he published four milestone papers. That same year, the middle-class Thai had enthusiastically joined the recognition with the publication of a number of popular

books on Einstein. To some extent, the boom of Einstein books in the first decade of the twentieth-first century coincided with advanced higher education. In the last three decades of the twentieth century, the number of students in tertiary education rapidly expanded. There was also an increase in the segment of the population educated up to secondary level. These educational expansions generated a readership for various kinds of writing.[279]

Biography

The core theme of the books published after the 1990s remains Einstein's biography as well as the key theme of the books on Einstein published before the 1990s. The popular literature in Thailand is part of the world wide popular account of Einstein, as Friedman and Donley put it 'Einstein is also the one 20th century scientist about whom biographical details and anecdotes have entered general public usage. Tales of Einstein's life occur repeatedly in popular literature.'[280] The biographical sketch of Einstein tends to focus on his childhood, his difficulties at school and his work life. His biographical portrait in the popular account can be divided into two categories, depending on the aims of the books. First, his popular literature on the Science-Buddhism dialogue, where Einstein is portrayed as a Buddhist or a deep admirer of Buddhism. Second, the popular books that aim at popularising Einstein's biography and his theories, and tend to depict him as a genius, an extraordinary man who struggled and overcame challenges.

Einstein's portrayal in Thai popular accounts demonstrates the admiring tone. He is often portrayed with miraculous words. For instance, he was praised to be 'api manut',

[279] Pongpaichit and Baker, 2005. p. 182.
[280] Friedman and Donley, p.5

which the Thai dictionary defines as 'the extraordinary human among other human'.[281] Khuppratrakul admires Einstein as 'a kind and humble 'yakyai (giant)'' in his book.[282] Defining Einstein as a giant is not a unique Thai term since Einstein was referred as a 'giant' on the back cover of *The Principle of Relativity*; the acclaim says 'It is really a thrill to read again the original papers by these giants'.[283] It is possible that Chaiwat could have been inspired by the international account on Einstein. These examples show that Thai portrayals of Einstein are similar to widespread images of Einstein. As the literature shows, the admiring tone in Einstein's biographical portrait seems to be a common practice in Thailand and elsewhere.

Quotations

Einstein is no doubt one of the greatest and most quoted scientist in history. There are popular books and websites disseminating his opinion and perspective toward many aspects e.g. politics, government, freedom, education, religion etc.

The majority of the popular books on Einstein written by Thai authors often add his quotations. This practice has been applied in the books published from the 1990s onwards, and it has become a customary practice ever since. The quotations are often inserted in books on Einstein to attract the readers' attentions; however, there are two books which are collections of his quotations. The collections of Einstein's speech and

---

[281] J Tongrungroj. 2005. *Albert Einstein: Manut Lae A-pi-manut (Albert Einstein; Human and Superhuman Sides)*. Bangkok: Sukkhaphapjai.

[282] C. Khuppratakul, 2000. *Einstein Phu Phlik Chaakkawan [Albert Einstein: Who Turns the Universe]*, Bangkok: Sarakadee Publishing. p.3

[283] H Antoon Lorentz, A Einstein, H Minkowski, H Weyl, A Sommerfeld. 1952. *The Principle of Relativity: A Collection of Original Memoirs on the Special and General Theory of Relativity*. Courier Corporation.

perspective on varied topics published in 2005,[284] *Raengbandanchai Chak Albert Einstein (Einstein: My Inspiration)* is a book with a combination of collection of Einstein's quotations and a diary. *Jintanakan Samkan Kwa Kwamru (Imagination is more Important than Knowledge)* is a collection of Einstein's quotations alone. The quotation 'Jintanakan Samkan kwa Kwamru (Imagination is more important than knowledge)' is easily one of the most mentioned quotations. The quote was referred to in many aspects, e.g. Win Leaowarin, a Southeast Asian Writers Award winner of 1997 and in 1999 he referred to the quote as inspiring his own writing in an interview with a newspaper.[285]

Another quotation often used is regarding Buddhism, however it has been greatly altered from the original. This alleged quotation became a key theme in the Science-Buddhism dialogue, which I investigate in Chapter 5.

Academic authors and equation

The last decade of the twentieth century saw an increasing number of the popular books on Einstein, however, the majority of the books were translated from English and Japanese. In 1999, Chaiwat Kupratrakul (PhD.), a physicist who also writes popular science fiction and science columns in newspapers, wrote a popular book on Einstein, *Einstein Phu Plik Chakkawan [Einstein Who Spins the Universe]*.[286]

---

[284] P Kongmuang, and P Bunpan. 2005. *Raengbandanchai Chak Albert Einstein (Einstein: My Inspiration).* Matichon: Bangkok; P Kongmuang. 2005. *Jintanakan Samkan Kwa Kwamru (Imagination is More Important than Knowledge).* Matichon: Bangkok.

[285] ASTV Phuchadkarnonline, 'Win Yok Naewkit Einstein', 2005 http://www.manager.co.th/Science/ViewNews.aspx?NewsID=9480000045560, accessed 4 April 2015.

[286] C Khuppratrakul. 2000.

There are four scholars who have featured Einstein's theories in their writings for the public: Chaiwat Kupratrakul, Buncha Tanabunsombat, Pairat Tadchayapong and Sakda Siriphun.[287] Buncha has written three books while Chaiwat and Sakda have each written two books on Einstein as Table 4.2 shows. Among these three scientists, Buncha's book, *Thitsadee Sampattaphap Albert Einstein (Albert Einstein's Relativity Theory)* tends to be the most serious popular science book on Einstein's Relativity Theory.[288] Buncha mentions Einstein's life story in his books but he devotes the majority of his content on Einstein's theories. While the other three scientists' books although they discussed Einstein's theories but the theories are not the focal points. Khuppratrakul wrote *Einstein Phu Plik* Chakkawan *[Einstein Who Spins the Universe]* to cover almost every aspect of Einstein's life: his life story, his personality, the relativity theory, his own writings, and the writing of others about him. The section of the book dealing with Einstein's Theory of Relativity aimed at a broad readership as the book was first published as a series of newspaper articles. Thus, Khuppratrakul explains the theory but he avoids using mathematic equations. In contrast, Tanabumsombat's explanation of the Relativity Theory included a fair number of mathematic equations and charts.

I consider Tanabumsombat's providing some mathematic equations in the Theories' explanations an extremely brave practice since Thai public tends to read books for entertainment, for example, comic books and fiction picture books are top categories.[289] Books providing mathematic equations could suggest to readers that they are serious

---

[287] S Siripun. 2005. *Kae Roi Einstein (1) (Einstein: Life and Success (1))*. Dansuta Kanpim: Bangkok.

[288] B Tanaboonsombat. 2002. *Thitsadee Sampattapap Albert Einstein (Albert Einstein's Relativity Theory)*. Sarakadee: Bangkok; B Tanaboonsombat.2005. *Fan Pan Tae Einstein [Einstein's Fan]*. Sarakadee: Bangkok.

[289] The Publishers and Booksellers Associations of Thailand. 2015. *The survey of Thai's behaviour on reading and buying popular books*.Bangkok.

books or textbooks. Tanabumsombat believed that 'the mathematic equations and diagrams are not put in to frighten the readers but they are provided to avoid the oversimplifying which could lead to some misunderstandings. The readers do not have to pay much attention on the equations and diagrams in order to understand the content.'[290] He added that, equations and charts helped in terms of clarifying the content and explicitly explaining the details of Einstein's theories, both of which were important to communicate.[291]

It should be noted that, to a certain extent, the middle-class Thai is familiar with Einstein's equation $E=mc^2$ since it tends to appear in many places, although its appearances may not connect to the meaning of the equation, e.g. it has been used as the name of an IT company EMC^2.[292] Another example, the equation is used as a name of a project on water treatment; the project's full name is Environmental Monitoring and Control Centre, and the company prefers to use EMC2 as its abbreviation.[293] Another example is a restaurant in Bangkok, which adopted Einstein to be its name and has it painted on its wall with Einstein's famous equation, $E=mc^{2,}$. However, the familiarity with the equation does not necessarily reflect the understanding of the equation.

People could be fascinated by the appearance and how promising the equation seems, although they may not comprehend it. There are similar cases regarding the

---

[290] *Buncha Tanabonsombat*, Interviewed by Chinnalong, Pathumtani July 2010.

[291] ASTV Phuchadkarn online, (2005). 'Dr.Buncha: Einstein's genuine fan.' [online] Available at: http://www.manager.co.th/Science/ViewNews.aspx?NewsID=9480000090016 [Accessed 4 Apr. 2015].

[292] Manager Online, (2013). 'EMC2 ruk talad SME [EMC2 invests in SME market]'. [online] Available at: http://www.manager.co.th/Cyberbiz/ViewNews.aspx?NewsID=9560000141527, Accessed 4 Apr. 2015.

[293] Npc-se.co.th, (2015). *NPC Safety and Environmental Service Co.,Ltd.*. [online] Available at: http://www.npc-se.co.th/npc_date/npc_previews.asp?id_head=11&id_sub=36&id=721, Accessed 4 Apr. 2015.

challenge of comphrehending the equation elsewhere, for instance, the case of China producing stamps with Einstein's equation on them, Friedman states that the equation could be as mysterious to the western public as well as most of Chinese users of the stamp with the equation printing on it to celebrate Einstein's centennial year in 1979.[294] Moreover, we learn from Stephen Hawking's *Brief History of Time* phenomenon that although the book sold very well, since the book involves some very difficult concepts and may not be easy to read by some people, it may be that there are more buyers than readers of the book.[295]

The indigenization of Einstein

The indigenization of Einstein is one of the key themes in the popular books. As mentioned, I use the term 'indigenization' to explain the attempts to bring him or his theories closer to the middle-class Thai. Eight of the thirty-six listed books or around twenty-two per cent attempt to indigenize Einstein which is a major theme in the Science-Buddhism dialogue (the titles that I have highlighted in the list). Another theme regarding Einstein which thrived in the 2000s was a comparison between him and the Buddha or his theories and Buddhist teachings, a core theme in the Science-Buddhism dialogue, this is elaborated upon in Chapter 5.

To some extent, the accumulative figures of Einstein publications in the 2000s is a consequence of the American promotion of Einstein. A prominent example of this being *Time* magazine's choice of Einstein as their 'person of the century' in the

---

[294] Friedman and Donley, p.180

[295] M. Rogers, 'The Hawking Phenomenon', *Public Understanding of Science*, 1 (1992), pp. 231-234 <http://dx.doi.org/10.1088/0963-6625/1/2/005>

December 1999 edition.[296] The year 2005 was an important once since it was the World Year of Physics and the centenary of Einstein's 'Annus Mirabilis' and the publication of his Theory of Relativity. As a result, the Ministry of Science launched a project in 2005 to celebrate Einstein's centenary; outcomes of the project included many pieces on Einstein published or broadcast across multiple media platforms and this may be a contributing factor to Einstein's popularity in Thailand.[297] It is striking that in 2005 alone thirteen books on Einstein were launched in the Thai market. Some of the authors noted in their forewords that they were celebrating the centenary of Einstein's 'Annus Mirabilis' (year of wonders) with their books, e.g. *Einstein: Nueng Sattawat Heng Pi Mahatsachan (Einstein: One Decade of the Miracle year)*.

It is important to note that the list, in Table 4.2, does not include the substantial number of the comic books on Einstein in the market, at the time. However, these books are not listed in the libraries' archives that I use as my sources. Nevertheless, these books are evidence of the use of Einstein as symbol of intelligence and genius in many commodities.

As discussed in Chapter 2, science development and science education in Thailand were marginal until the mid twentieth century when the fundamental foundations for development of science were established with the support of the US and navigated by the National Economic Board, the Education Council and the Research Federation. However, human resources for science were still low. The US offered full funding for Thai students who wished to study science at postgraduate level in the US.

---

[296] *Time* magazine, 31 December 1999

[297] The Ministry of Science and Technology Website, http://www.most.go.th/einstein/activity_name.htm accessed 27 November 2011

In the late 1950s there was a small group of Thai students that decided to resist the social trend by choosing to take science at university level rather than medicine.[298] Their inspiration perhaps came from the flourishing science atmosphere in the US. This group came back from the US and took significant roles in science and technology education.

Although Thailand had only two universities prior to 1960s--Chulalongkorn University, the first Thai university, founded in 1916, and Thammasat University established in 1934—during the 1960s higher education began to expand. A number of universities in Thailand rapidly increased from 5 to 17 in a period of only ten years (1961-1972) and student enrolment increased dramatically from 15,000 to 100,000.[299] Strikingly, this was the first time that some 'small-town lower middle class' students had entered the higher education level.[300] Higher education began to be accessible to non-privileged Thai people. Some new universities were established outside the capital, in the northern, northeastern, and southern parts of the country. Subsequently, specialist universities were founded, such as Kasetsart University that specialised mainly in agricultural studies. Chulalongkorn University was the only university that taught science at tertiary level, until in 1958 when the second teaching science institute was established at the Mahidol University. Later on, almost every university in Thailand started to teach science.

The delay in the expansion of science education and scientific infrastructure in Thailand may have been the reason for the late practice of incorporating particle physics into the dialogue of science and Buddhism by popular book authors, which happened as

---

[298] Ibid., p. 36.

[299] Pasuk and Baker, p. 301.

[300] Citing B. Anderson and Mendiones (1985, pp. 41-420) in Pasuk and Baker, p. 301.

late as the 2000s. Although Einstein's relativity theories were referred to in popular Thai books regarding the Science-Buddhism dialogue published in the 1960s, the theories were only mentioned briefly. From my point of view, the authors fail to explain clearly why these findings by Einstein were compatible with the Buddhist's teaching. Moreover, some of the books that attempted to discuss the harmony between Einstein's discoveries and Buddhism misunderstood the thermodynamic concept by Einstein. Until the 2000s, some Thai authors made their claims on the agreement between Einstein's relativity theories and Buddhism more explicit. In comparison, Hammerstrom reveals that the Chinese Buddhists had also incorporated Einstein's discoveries in their arguments to claim that Buddhism is consonant with science. The discourse took place in China earlier than in Thailand.[301] Hammerstrom found that the Chinese Buddhists referred to the relativity theories since the 1930s, which was significantly earlier than occurred in Thailand.[302] I found that the difference between Chinese and Thai contexts played vital parts in the practices. According to Hammerstrom, by the end of the 1920s, the Chinese were well aware of the Theory of Relativity.

4.1.2 The coverage of the other scientists (international and Thai) in Thai popular books

As established, Einstein's biography is one of the key themes in the Thai popular books as shown by a significant number of books on his life and work. In this section, to determine the high profile of Einstein in Thai popular account, I examine the popular books' coverage of other well-known international scientists and Thai scientists to

---

[301] Hammerstrom, Erik J. 'Buddhists Discuss Science in Modern China (1895-1949)', Ph.D thesis, (2010) Indiana University.

[302] ibid

compare with the coverage of Einstein. A comparison analysis between the coverages will be conducted to determine the high profile of Einstein in popular account.

The Chulalongkorn library holds at least fifty popular books on international and Thai scientists' biographies. The majority of these books are collections of a few scientists' biographies, where each chapter devotes to selected scientists' biographies. In the 1960s when the popular books on scientists' biographies first published, the majorities of the books on scientists focused on international scientists, until 1977 when the first popular book on Thai scientists was published, *Nak Wittayasat Thai [Thai Scientists]*.[303] In total, there are more popular books on the international scientist, only nine books are on the Thai scientists while the rest (forty-one books) are on international scientists. Moreover, the popular books on Thai scientists were published by three publishers which were established and directly supported by the Ministry of Science and Technology the National Science and Technology Development Agency and the Foundation of Science and technology Council of Thailand. These two organizations are non-profit organizations. Another publisher, Chomromdek Publishing House runs as a for profit private company, it published three popular books on the Thai scientists which were awarded the Outstanding Scientists Awards.[304] Chomromdek Publishing House published these books in partnership with Ongkankar Kurusapa (Kurusapa Trade Organization), an agency under the Ministry of Education. Ongkankar Kurusapa publishes textbooks and leisure reading books for state schools and supplies them in its own book and stationary shops. Ongkankar Kurusapa clearly states in its mission that it

---

[303] S Jumpangoen. 1977. *Nak Wittayasat Thai [Thai Scientists]*. Prapansarn: Bangkok.

[304] S Jumpanguen. 2000, *Thai Outstanding Scientists 1995*-2000, Chomromdek Publishing House. Bangkok; S. Jumpanguen, 1994, *Thai Outstanding Scientists 1988-1994*, Chomromdek Publishing House. Bangkok; S Jumpanguen, 1987, *Thai Outstanding Scientists 1982-1987*, Chomromdek Publishing House. Bangkok.

subsidises its book prizes.[305] It is likely that the publishing partnership between Ongkankar Kurusapa and Chomromdek Publishing House is a guarantee that the books on Thai scientists would reach the customers, especially to the state schools. Since the private publishers were unlikely to publish the popular books on Thai scientists but rather international scientists, the private publishers' choices of book publishing reflect the readers' demand. Therefore, it demonstrates the appreciation of the international scientists among Thai readers.

The earliest biographies on international scientists in Thailand appeared in 1961, the genre proves to be one of the main themes in popular science books market as it has been published quite regularly since. In the earlier period, books regarding scientists focused on foreign scientists until the late 1970s when biographies of Thai scientists began to be published. The collections of scientists' biographies is a popular genre in popular science books until the present. *Chewaprawat Nak Wittayasat [The Scientists' Biography]* by Tassanawat was published in 1967 and is arguably the first publication to feature biographies of scientists.[306] The book featured biographies of fifteen international scientists and pioneers in the field of science including Nicolaus Copernicus, William Herschel, Galileo Galilei, Michael Faraday, Guglielmo Marconi, Marie Curie, the Wright brothers, and Albert Einstein.

In 1969, two books on the world's greatest scientists were published, *Tamnuep Chiwaprawat Nakwittayasat Eak Khong Lok [The Directory of the World's Greatest Scientists]* and *Nak Wittayasat Samkhan Khong Lok [The Outstanding World*

[305] Suksapan Panich website, http://www.suksapan.or.th/index.php?option=com_content&view=article&id=78&Itemid=158, accessed 23 April 2014.
[306] Tassanawat. 1967. *Chewaprawat Nak Wittayasat [The Scientists' Biography].* Phra Nakhon: Ruamsarn.

Scientists].[307] The previous book was translated from Dictionary of Scientists while the latter was written by a Thai author, Kriangsak Pisnaka. The latter book sheds some light on a Thai author's choice of writing on the selected world scientists. Pisnaka provides short biographies of thirty international scientists. The short biographies cover their early life, their education, their working lives, and their achievements, but do not provide an in-depth explanation of their theories or works. He stated that the book's target audience is students, therefore he selected only the scientists and the inventors that featured in the science textbooks provided by the Ministry of Education curriculum. It is interesting to examine how Pisnaka arranges the listed scientists, particularly the first ten scientists on the list. According to Pisnaka's order, the first ten scientists are Galileo Galilei followed by Charles Darwin, Thomas Alva Edison, Louis Pasteur, Sir Isaac Newton, Edward Jenner, Benjamin Franklin, Albert Einstein, Marie Curie, and Aristotle. The selected list of scientists' biographies is similar to those of Tassanawat's book. It is clear that he does not position the biographies alphabetically or chronologically, it seems that he arranges his order randomly. However, Einstein is included in the list which is always the case to the other books on the world's greatest scientists. This reflects that Einstein was recognized by these Thai popular books to be one of the world's greatest scientists.

As I have mentioned, the majority of the popular books do not focus on an individual scientist but rather a collection of scientists. These scientists are Isaac Newton, Charles Darwin, Benjamin Franklin, Marie Curies, Albert Einstein, and Stephen Hawking. Among these scientists, Einstein was covered the most. There were thirty-nine

---

[307] A.V. Howard. Boontrung Sarawut trans. *Tamnuep Chiwaprawat Nakwittayasat Eak Khong Lok [The Directory of the World's Greatest Scientists]*. Pranakorn, 1969; Kriangsak Pisnaka. 1969. *Nak Wittayasat Samkhan Khong Lok [The Outstanding World Scientists]*. Phra Nakhon: Kasembannakij.

books on Einstein's biography and work while only three, ten, and seven books on Newton, Darwin and Hawking, respectively. Newton's biography and work were published as popular books only recently in 2009.[308] Although, Newton's works were published earlier but in science textbooks rather than popular book; so presumably he is a well-known scientist to Thai students who studied science. There are four popular books on Newton's biography and works; two of them were translated from English, and Thai authors wrote the other two. Darwin is another one of very few foreign scientists that has been written about in the Thai popular books, but the number of books is still very small in comparison to those on Einstein. There are approximately ten books on Darwin while there are thirty-nine on Einstein.[309] The biography and work of Darwin were recently published with the earliest publication in Thai being released in 1996 with the rest being published in the first decade of the twentieth-first century. Darwin's most renowned and best-known publication, *On the Origin of Species*, was only published for the first time in 2015. A moderate number of books on Einstein have been translated into the Thai language since 1965.[310] Stephen Hawking is another Western scientist who is the subject of a select number of Thai-language publications. There are seven publications on Hawking, published in Thai since 2010 and this is far fewer than the number of books published on Einstein.

---

[308]S. Sujira, 2009, *Phisik Newton (Physics Newton)*. Bangkok: Amarin Publishing; W Rankin, A. Trilertmala, trans., 2011, *Isaac Newton: Adchariya Wittayasat (Introducing Newton)*. Foundation for Children. Bankok.; J Gleick, P Burikum trans., 2011, *Isaac Newton Mahaburut Lok Wittayasat (Isaac Newton).* Matichon. Bangkok.; Boonchai Jaiyen. 2010. *Kid Bap Adchariya Nak Wittayasat Isaac newton [Genius Scientist: Isaac newton*]. Prat Publishing. Bangkok.

[309] The data from the National library archive and the Chulalongkorn University library archive.

[310] S. Assawachaicharn, the editor of *Sarakadee* magazine and books publishing, interviewed by Chinnalong, 20th July 2011.

I have also examined an account of another theoretical physicist, David Bohm whose work 'has inspired the popular work on the metaphysical implications of physics' such as *The Tao of Physics*.[311] Although, there are substantial literature on Bohm internationally, however, his popular account in Thailand is rather small. I found that there are two books written by him only recently being translated to Thai version, *Wa duay Suntriyasontana (On Dialogue) and Wa duay Khwam Sangsan (On Creativity)*.[312] It is noted that my examination of Bohm's profile in newspapers and Pantip also yield no discussion regarding him. In comparison with the great number of books on Einstein being published on Thai market, it could be said that Bohm had not received the attention that Einstein had. This reflects that the middle-class's interest in Einstein is rather distinctive; the interest is likely to be on the indigenization of him which can easily fits in the Science-Buddhism dialogue.

I have demonstrated that Einstein has a high profile in Thailand drawing on the popular books coverage of his biography and works. I have investigated the popular books focusing on his biography and works; also, I have conducted a comparison analysis between Einstein's coverage and the other scientists' coverage. My finding shows that he is covered the most among scientists (International and Thai) in the popular books. The next section I will examine Einstein's coverage in Thai newspapers and compare the coverage with that of other scientists' coverage.

---

[311] J. Clement Van Pelt, 'Review Discussion The Essential David Bohm', *Sophia*, Vol.44, No. 1, 2005, p.130

[312] Phecharat Pongcharoensuk (trans.), Pojjana Chantarasanti (edit). David Bohm. *Wa duay Suntriyasontana (On Dialogue),* Bangkok, Suan Nguenmima, 2011. Tomorn Sukpricha (trans.), David Bohm. *Wa duay Khwam Sangsan (On Creativity*). Bangkok, Suan Nguenmima, 2013.

4.2 Einstein in the Thai newspapers

4.2.1 The coverage of Einstein in newspapers

This section focuses on the coverage of Einstein in Thai newspapers, through a review of three selected newspapers. I begin with the examination of the frequency of Einstein-related stories in these newspapers, and go on to examine how Einstein was depicted in the newspapers. I then carry out a comparative analysis of the coverage of Einstein with other famous foreign scientists such as Newton, Darwin, and Hawking.

During my research, I searched the *Matichon* newspaper database on the time period from 1997 to 2011 using the search terms 'Einstein' and 'sampattaphap' in both Thai and English. The search yielded fifty-eight articles on Einstein-related stories in these newspapers during this period. *Krungthepthurakit* had the highest level of coverage of Einstein among the three newspapers and featured twenty-eight articles on Einstein. *Matichon* had twenty-seven articles, and *Thairath* had just three news articles on Einstein. Out of the three newspapers covered in this study, *Thairath* reported the fewest number of stories on Einstein demonstrating that *Thairath* does not give high news value to the Einstein-related stories. Although, as mentioned earlier, there was the 2005 special world tribute to Einstein and a local newsworthy event, *Thairath* did not feature any stories on Einstein, which could reflect the demand of *Thairath* readers--since one key criterion in giving value to any event is its reader's interest. It is not surprising that *Thairath* covered very little on Einstein considering science was not *Thairath*'s main themes, this being in line with the tabloid style and relatedly lower class readership of *Thairath*. Its science coverage is the lowest among these three newspapers, at fewer than three per cent of its overall content. This further supports

my suggestion that the interest in Einstein and the popularity of Einstein-related articles are very much a middle-class theme which is certainly the case for the popularisation of science in Thailand and other countries as well. The graph in figure 4.1 plots the trends of news coverage and articles on Einstein in these three newspapers over a fifteen-year period.

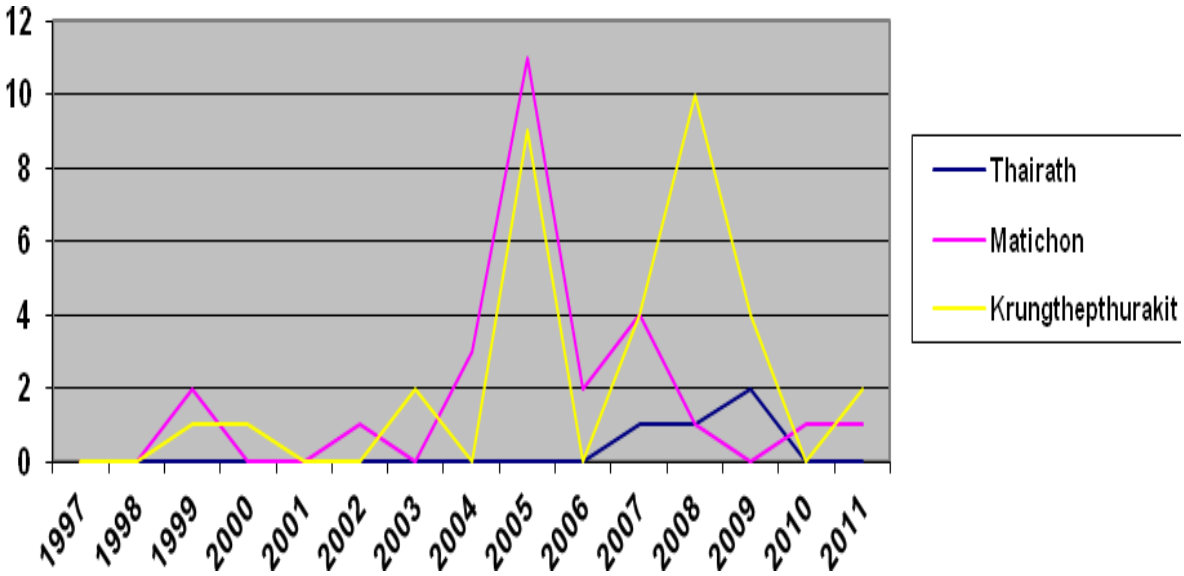

Figure 4.1 Einstein related coverage in selected Thai newspapers between 1997-2011.

The graph shows that there was no coverage of Einstein from 1997-1998. In 1999, there are three articles on Einstein. From 2000-2004, there were only four articles on Einstein among these newspapers. In 2005, the coverage of Einstein rapidly increased, with contributions by *Matichon* and *Krungthepthurakit*. In 2006, the number plunged in both *Matichon* and *Krungthepthurakit*; it gradually rose again in 2007 with contributions from all three newspapers including Thairath, which, for the first time, published an article on Einstein in 2007. In 2008, the coverage of Einstein significantly increased with *Krungthepthurakit* as the key contributor.

It is important to note that the articles on Einstein are problematic to categorise since each article tends to present a combination of biography, the quotations, the famous equation, and mentions some of his other theories as well. Often, these stories were presented with similar proportion in each piece. In other words, the majority of the articles are a broad-spectrum on the image of Einstein. Therefore, the articles can be categorised roughly according to their main themes into four groups: the special events, biographical focus, theories focus, and the indigenization of Einstein. Next, I examine the significant characteristics of these key themes.

The events

The Thai popular account of Einstein contains a great proportion of reports on Einstein related events, which are prescheduled events (e.g. the Physics World Year in 2005) and non-scheduled events (e.g. CERN discovered a particle which travels faster than light which may prove Einstein's prospect regarding the light). There are twelve pieces of stories on special events; the bulk of which were presented in 1999 and 2005.

As a substantial number of scholarly work demonstrates, Einstein has become a celebrity scientist, which is greatly is affected by the American media's effort to promote him and his theories since the early twentieth century.[313] My observation strongly suggests that it is the case for Thailand as well, although the popular account of Einstein in Thai media was long delayed in comparison to those of the American and European account of Einstein.

[313] For example, A.J. Friedman and C. C. Donley, 1985, *Einstein as Myth and Muse,* Cambridge University Press.

- *Einstein on the front page for the first time in 1999*

The sudden appearance of Einstein's coverage in 1999 is certainly in response to the *Time* magazine 31st December 1999 issue honouring him as 'the person of the century'.[314] There were three articles regarding Einstein-related stories in 1999. Both *Matichon* and *Krungthepthurakit* reported on *Time* magazine's honouring of Einstein as 'the Person of the Century'.[315] *Matichon* gave the story of Einstein as 'the person of the century' a great value by covering him in another front page article; the article was given a substantial amount of space, a quarter of a broadsheet page.[316] The story provided a short biography including brief narratives of Einstein's theories that led to his Nobel Prize in Physics in 1921 as well as interviews with Stephen Hawking and Managing Director of *Time* Magazine Walter Isaacson on why Einstein deserved the accolade of 'person of the century'.[317]

It is important to point out that it is rare for Thai newspapers to feature science-related article on their front page. The exceptions were the science-related articles involving the monarch and stories regarding Thai students who won the gold medals from the Academic Olympiads competition, the coverage of the competitions in newspapers will be discussed later on.[318] The Einstein story on *Matichon*'s front page is definitely a rare exception, it reflects to some extent that Einstein has a prominent

---

[314] *Time* magazine, 31 December 1999.

[315] Anon. 'Nittayasan Time puey chue Einstein-Pinong Wright Tid Pho Phuesongphumpanya [Time reveals Einstein and the Wright Brother are in the List of the Hundred Most Influential People of the Century]'. *Krungthepthurakit*. 22rd March 1999. p.16.

[316] Anon. 'Albert Einstein, Bookon Hang Sattawat [Albert Einstein: Person of the Century].' *Matichon*. 27th December 1999. p. 1 and 20.

[317] Ibid.

[318] The Academic Olympiads are a group of national annual competitions aimed at high school students who compete in various areas of science.

profile in Thai newspaper. *Krungthepthurakit* covered the *Time*'s list of the twenty-four most influential people of the century but did not focus on Einstein's biography and efforts to the same level as *Matichon*.[319]

- *The World Year of Physics: the Einstein boom in Thailand*

In 2005, *Matichon* covered the Einstein-related stories in ten articles while *Krungthepthurakit* covered eleven articles. In total, twenty-one articles on Einstein were published in 2005, the highest range year of my samples. The finding correlates with my findings, discussed in the previous section, demonstrating that 2005 had witnessed the boom of popular books on Einstein as well. Understandably, the increase of the Einstein's coverage was the result of the world events marking the centenary of his 'Annus mirabilis' (Year of Wonders) and the first publication of his Special Theory of Relativity. The United Nations Educational, Scientific and Cultural Organization (UNESCO) announced that 2005 was the 'World Year of Physics', a 'worldwide celebration of Physics and its importance in our everyday lives.'[320]

In Thailand, the Ministry of Science and Technology held a press conference to promote this special event and many activities were organised to celebrate this special year. A number of newspapers covered these events and provided an unprecedented high level of coverage, particularly for a scientific event in Thailand. It was the major event that many organizations e.g. companies and universities joined in celebrating

---

[319] Anon. 'Nittayasan Time puey chue Einstein-Pinong Wright Tid Pho Phuesongphumpanya [Time reveals Einstein and the Wright Brother are listed in the Hundred Most Influential People of the Century]'. *Krungthepthurakit*. 22rd March 1999. p.16.

[320] American Physical Society Sites. http://www.aps.org/programs/outreach/index.cfm, accessed 23 May 2014.

Einstein's theory by organizing conferences, seminars, and public lectures.[321] These events were featured in a few newspapers which meant the activities were known by the public. *Krungthepthurakit* and *Matichon* actively responded to the special events organised by the Thai government. Most importantly, it seems likely that 2005 was the first time that Einstein's theories were elaborated upon by newspapers, as I will elaborate further below.

The years of 1999 and 2005 are universally significant in the celebration of Einstein and the coverage in Thai newspapers noticeably increased in response to the events. However, in 2008, the number of the articles on Einstein rapidly increased further with *Krungthepthurakit* as the main contributor with eleven articles. It was a distinctive case in Thailand, as the key theme in *Krungthepthurakit*'s coverage was the review and discussions of the famed book, *Einstein Phop Phraphuttachao Hen*. *Matichon* and *Thairath* did not take the leading account for the coverage of Einstein thrives, although they covered a small number of articles on Einstein. These articles are examined in Chapter 5.

The portrayal of Einstein's biography

Einstein's biography is one of the key themes in newspaper accounts of the scientist. There were ten articles on Einstein's biographies, covered by *Krungthepthurakit* and *Matichon*. As mentioned, the articles on Einstein often were presented as a combination of many key themes in one piece i.e. biography, work, and achievements. The articles on his biography have a strong tendency to insert at least a

[321] Examples of newspapers articles that covered the events are Anon. 'Phi Hang Phisik Lok [The Year of World Physics]' *Thaipost*, 23rd January 2005, p.5. Anon. 'Dueng Nakwit Chidung rom sawana phisiklok [The acclaimed scientists join the World Physics seminar]', *Komchaleuk* 18th May 2005, p.10.

photograph of Einstein, which I will elaborate later. Most of his biographies were published in response to the special events celebrating Einstein in 1999 and 2005. A concrete example is *Matichon*'s article on 15 February 2005, this article broadly covers Einstein's characters, biography, quotations, and theories. It also gives information regarding the international activities arranged for celebrating Einstein's miraculous year. The article manages to mention Einstein's five research papers published in 1905, the Theory of Relativity, the Special Theory of Relativity, and the famous equation. However, none of these principles is elaborated.

The biography of Einstein tends to focus on the challenges that he overcame, particularly during his younger years. There are two perspectives on the life of young Einstein, as he is described as experiencing a delay in language development. *Matichon* tends to interpret the experience straightforwardly while *Krungthepturakij* proposes a different view. For instance, the article published on 27 December 1999 asserts that 'Einstein did not show sign of genius when he was young, on the opposite, he was delayed in developing the skill to talk and did not do well at school…'[322] The article adds that in he also struggled in his studies in higher education, although he finally did manage to finish a degree at an institute in Switzerland. However, in the end, as is well-documented, it turned out that he had achieved greatly.[323]

Krungthepturakij published an article on 24 February 2005 with title, 'Einstein ton pen dek saen cha ngo thuem ching rue [Was young Einstein dumb?']. It offers an interpretation of Einstein's delay in language development, asserting that his habit of

---

[322] Anon. 'Albert Einstein, Bookon Hang Sattawat [Albert Einstein: Person of the Century]'. *Matichon*. 27th December 1999. p. 1 and 20.
[323] ibid

repeating his sentences does not demonstrate that Einstein was not bright. On contrary, the article states 'it could mean that young Einstein could have wanted to make sure that every word is correct.'[324] Another article by *Krungthepturakit* issued on 27 August 2015 suggests that young Einstein was intelligent and provides evidence to support the statement, i.e. he was curious about the compass given to him as a gift; he proved the Pythagoras' Theorem at age eleven; and he learnt piano when he was six years old. The article concludes that Einstein showed signs of genius since he was young.

The narrative regarding Einstein's work life is often recounted in combination with his achievements and explanations of his theories. The articles apply the admiring tone in describing Einstein's with using words such as amazing, miraculous were used to describe his biography.[325] He is described as having a good sense of humour; decisive, curious, intelligent, and genius.[326] There are two articles that specify the method Einstein applied in his work, these articles are striking in terms of their explanations. *Krungthepturakij's* article on 6 December 2008, describes Einstein's process of developing his theories by using 'thought experiment', particularly when he developed the famous equation.[327] Another article by the same newspaper published on 31 March 2005, interprets Einstein's work method as a Buddhist's practice in which he reached the high level of meditation.[328] Such an interpretation speaks to what I define as the indigenization of Einstein, the key theme of Chapter 5.

---

[324] B.Tanabunsombat, 'Einstein ton pen dek saen cha ngo thuem ching rue', *Krungthepturakit*, 24 February 2005. p. 8

[325] *Matichon*, 30 September 2005, p.22

[326] *Matichon*, 15 February 2005, p.33; *Matichon* 10 March 2005, p.5; and *Krungthepturakij* 31 March 2005, p.5.

[327] Buncha Tanaboonsombat, 'Bueang lue bueang lang samakan $E=mc^2$ (2) [$E=mc^2$ (2)]', *Krungthepturakit*, 6 December 2008, p. 6.

[328] 'Naeo khit atsachan khong burut mahatsachan Einstein (2) [Amazing Views by the Miraculous Man (2)]', *Krungthepturakit*, 31 March 2005, p. 5.

These examples show that the depiction of Einstein in Thai popular account highlights the difficulties he faced and overcame. By highlighting such features in his life, the depiction of him as a genius with profound achievement in later life is understood with greater appreciation. The practice and portrayal of Einstein in Thai popular accounts is partially in accordance with universal accounts of Einstein, as David Rowe indicates, 'Einstein's biography have been stressed the heroic dimension of his life, thereby reinforcing the prevailing image of him as a solitary genius.'[329] However, the Thai accounts of Einstein stress another dimension which is distinctive from the universal accounts, that of Einstein's relation to Buddhism. As I've indicated several times throughout, Thai accounts uniquely portray Einstein in a Buddhist framework, that is they attempt to, what I term 'indigenize' him. This way of characterizing Einstein in Thai accounts is discussed in Chapter 5.

The Einstein's theories in Thai newspaper account

There are eight articles focusing on Einstein's theories from the total sample of fifty-eight articles on Einstein, which is thirteen per cent of the total. Six articles focus on the theories of the relativity and the famous equation, while the other two articles examine the usage and applications of Einstein theories in everyday life. Tanaboonsombat wrote four articles[330]and two articles by *Krungthepturakij* were

[329] D E Rowe, 'Einstein and Relativity: What Price Fame?' vol. 25, *Science in Context*, 2010, p. 197.

[330] Tanabumsombat. 'Samphattaphap VS Khwam mai Praeplian: Kaen Khwamkhit khong Einstein [Einstein's key concept: relativity vs invariance]', *Krungthepturakit*, 22 January 2005, p. 10.; Anon. 'Naeo khit atsachan khong burut mahatsachan Einstein (1) [Amazing Views by the Miraculous Man (1)]', *Krungthepturakit*, 24 March 2005, p. 5; Anon. 'Naeo khit atsachan khong burut mahatsachan Einstein (2) [Amazing Views by the Miraculous Man (2)]', *Krungthepturakit*, 31 March 2005, p. 5.; Tanabumsombat. 'Bueang lue bueang lang samakan $E=mc^2$ (1) [$E=mc^2$ (1)]', *Krungthepturakit*, 29 November 2008, p. 6; Tanabumsombat. 'Bueang lue bueang lang samakan $E=mc^2$ (2) [$E=mc^2$ (2)]', *Krungthepturakit*, 6 December 2008, p. 6. [Theory]

written anonymously.[331] The other two articles focused on how Einstein's theories have been applied to make appliances in everyday life. The small proportion of the articles on theories in Thailand correlates with the results from a few highlighted surveys, e.g. Mellor and collaborators surveyed science content in BBC; Leon surveyed the science-related information in European prime-time news, and Pellechia has analysed the science content of the three leading US newspapers.[332] The surveys also found little emphasis on scientific explanation in the media.

- *Samphantaphap or samphattaphap*

It is striking that although *Matichon* and *Krungthepthurakit* considered Einstein being honoured by *Time* magazine a high newsworthy event, it seems that interest was more toward Einstein as a person, but not his theories. The concrete examples of the lack of interest in Einstein's work in the popular accounts are *Matichon* and *Krungthepthurakit*,[333] which used the Thai term 'samphantaphap' [relationship] when mentioning Einstein's Theory of Relativity, instead of using the correct term 'samphattaphap' [relativity].[334] The incorrect term was used by both newspapers until 2002, the story of Einstein's manuscript put on auction was covered by both

---

[331] Anon. 'Naeo khit atsachan khong burut mahatsachan Einstein (1)', *Krungthepturakit*, 24 March 2005, p. 5; Anon. 'Naeo khit atsachan khong burut mahatsachan Einstein (2)', *Krungthepturakit*, 31 March 2005, p. 5.

[332] M Long, 'Scientific Explanation in US Newspaper Science Stories' *Public Understanding of Science*, 1995, p. 4; B. Leon, 'Science Related Information in European Television: A Study of Prime-Time News' *Public Understanding of Science*, vol. 17, 2008, p. 443.

[333]'Albert Einstein, Bookon Hang Sattawat [Albert Einstein: Person of the Century]' *Matichon*. 27th December 1999. p. 1 and 20. And 'Nittayasan Time puey chue Einstein-Pinong Wright Tid Pho Phuesongphumpanya [Time reveals Einstein and the Wright Brother are in the List of the Hundred Most Influential People of the Century]'. *Krungthepthurakit*. 22rd March 1999. p.16.

[334] According to *The Dictionary of Scientific Terminologies* (English-Thai, Thai-English) produced by The Royal Institute of Thailand had established a committee to coin science and technology terminologies imported from the foreign languages in 1978. The first edition of *The Dictionary of Scientific Terminologies* (English-Thai, Thai-English) was published in 1985.

Krungthepthurakit and *Matichon*. However, *Krungthepthurakit* changed its usage to the correct terminology.[335] However, *Matichon* still used the incorrect term until 2004 when *Matichon* started using the correct term in its articles.[336] The examples demonstrate the journalists and editors' lack of basic knowledge on Einstein's theories.

The first article to report on Einstein's theories appeared in the *Krungthepthurakit* on 22 January 2005.[337] The headline 'Samphattaphap vs Kwam mai Phraeplain [Relativity vs invariance]' was chosen to indicate the two key concepts of Einstein's theory. The article focuses on defining the theory's term and explains the meaning of the term 'samphattaphap (relativity)'. The article pinpoints that 'Thai often mistakenly uses the term 'samphantaphap' which means 'relationship' rather than the correct term 'saphattaphap'.' It adds that, the correct term gives the wrong impression that everything is relative which is incorrect as there is another concept of 'invariance (Kwam mai Phraeplain)' that is involved. This article also gives clear explanations of the Theory of Relativity and the concept of invariance, although in brief as the column space is limited.

- *$E = mc^2$ and jargons without explanation*

Perhaps the world's most famous equation, is $E = mc^2$. Universally, the famed equation is said to be 'a symbol of modern physics'.[338] The equation is a significant feature in the popular account of Einstein in Thailand as well. As discussed throughout,

---

[335] *Krungthepthurakit*. 'Pramoon Tonchabap Yakyai Nakphysik Lok [The world great physicist's manuscript is on auction]'. 16th October 2002. p.8.

[336] It can be seen in *Matichon*, 'Pramoon Tonchabap Einstein 21.5 lan [Einstein's manuscript on auction for 21.5 million Baht]'. 9th October 2002. p.19. and *Matichon*, 'Tualok Traim Chalong 100 Pi Albert Einstein [The World Events to Celebrate 100 Years of Albert Einstein].' 9th October 2004, p.20

[337] B. Tanaboonsombat. 'Samphattaphap VS Khwam mai Praeplian: Kaen Khwamkhit khong Einstein', *Krungthepturakit*, 22 January 2005, p. 10.

[338] H. Bernard, R Alfonso, and H. E. Puthoff,'Beyond E=mc2' *THE SCIENCES,* 1995, p. 26.

most middle-class Thai would be familiar with the famous equation, $E= mc^2$ as it appeared in many places, e.g. it was used in the names of companies and restaurants. Moreover, it appears in a more scholarly venue as the Media Monitor Thailand held a press conference to announce their survey on the science content in television. The project is called $E=TV^2$ to imitate the famous equation.[339]

In the Thai newspaper accounts, the equation is mentioned in a majority of the articles on Einstein, however, as mentioned, the focus of the article may not be on the theories but biography.[340] The equation was mentioned as if it has already been comprehended by the readers, which is unlikely to be the case. Arguably, only a small number of the readers would understand this equation since it requires certain intellectual background in science and mathematics to be able to grasp it. More importantly, *Matichon* provides the famous equation's description as 'the formula to build the atomic bomb' while *Krungthepturakij* never gives such a description to the equation.[341] By giving the equation such a description, *Matichon* has given into the universal 'persistent myth' in the popular accounts, as E.G. Thomas points out.[342] Thomas argues that suggesting that the nuclear weapon is a consequence of the equation is misleading. Thomas gives two examples of media that misrepresented the concept of the equation, an episode of the BBC's Horizon, entitled 'Einstein's Equation of Life and Death' and a book, *$E = mc^2$: A Biography of the World's Most Famous Equation*. I will not expound on Thomas's explanations of the original meaning of the

[339] Media Monitor, 'E-TV^2: Are science TV programmes good enough?', 15 August 2009. http://mediamonitor.exteen.com/page/14, accessed 1 May 2015.
[340] *Matichon* 21 February 2005, *Matichon* 15 February 2005, and *Matichon* 19 June 1999
[341] Ibid.
[342] E.G. Thomas, 'What's so Special about $E = Mc^2$? Separating Truth from Myth', *European Journal of Physics*, Vol 26, 2005, p.125.

equation since it involves a certain number of other equations, and it is too in depth into physics for purposes of this study. Suffice it to say, Thomas concludes that the nuclear weapon would have been developed without the discovery of the equation.[343]

It is worth discussing why the articles published by *Matichon* alone described the equation in connection to the nuclear bomb, while it is not the case for *Krungthepthurakit*. A key element was at play in the difference between these two newspapers' practices. *Matichon*'s articles on Einstein were written by a variety of columnists, some articles were presented without stating the columnists' names. It is likely that the articles were written by editorial teams, as Saengphen, a senior journalist of the *Matichon* reveals '*Matichon* does not employ science journalist but rather allocates its science section on journalists from other editorial desks, e.g. foreign, and education desks.'[344] On the other hand, articles on Einstein's theories in *Krungthepthurakit* were contributed a great deal by Tanabunsombat (Ph.D), who holds a Bachelor degree of physics and wrote popular books on Einstein.[345] Although there is no guarantee that a scientist would be better at popularising science than a journalist, however, no doubt that the scientist, in particular Tanaboonsombat with his qualifications and his fondness of writing popular science books for the public, would have more fundamental background in physics than the *Matichon*'s journalists who are not even science journalists. The lack of a science journalist, as Saengphen asserts, may have been a significant reason that *Matichon* did not cover Einstein's theories a great deal.

---

[343] Ibid.

[344] Suranee Saengphen, 'Quality of life desk,' *Matichon*. Interviewed by Chinnalong, 20 January 2012

[345] B. Tanaboonsombat. 2005. *Fan Pan Tae Einstein [A Huge Fan of Einstein]*. Bangkok: Se-Ed Publishing. B. Tanaboonsombut. Suthat Yoksan, and Chaiwat Khuppratrakul. 2005. *Einstein: Nueng Sattawat Heng Pi Mahatsachan (Einstein: One Decade of the Miracle year)*. Bangkok: Sarakadee.

Next, I discuss the articles on the famous equation written by Tanaboonsombat. Tanaboonsombat writes on the theory of relativity in four pieces. Each article occupies one fourth of a broadsheet, thus in total, the theory was explained within a total space of a broadsheet. I mentioned the space used because space is one of the crucial factors in explaining scientific knowledge. As Kapon found, the constraint of space in newspapers greatly attributes to the lack of scientific explanation.[346] Tanaboonsombat certainly had the luxury of space in his column in *Krungthepthurakij*, allowing him to be able to fully expound on the equation. In this regard, allocating space could be one of the factors that *Krungthepturakij* covers the Einstein theories more than *Matichon* since my sample articles from *Krungthepturakij* provides more space for the articles on the theories.

By comparing Tanaboonsombat's articles with the rest of the articles on Einstein's theories e.g. *Krungthepthurakit*'s articles published on 24 and 31 March 2005, would shed some light on the characteristics of the articles on Einstein's theories. Rowan argues that writers are 'promoting understanding' through the three types of explanation: 'elucidating', 'quasi-scientific' and 'transformative'.[347] The concepts were originally proposed by Rowan and Long who apply the concepts in a survey of scientific explanations in US newspapers.[348]I will follow Long's descriptions of those two concepts since her study focuses on the newspapers similar to mine. According to Long, the 'elucidating explanation' is a sentence that provides part or all of the definition of a scientific term, concept, or phrase; the 'quasi-scientific explanation' are sentences

[346] S. Kapon, 2013, 'Bridging the Knowledge Gap: An Analysis of Albert Einstein's Popularized Presentation of the Equivalence of Mass and Energy', *Public Understanding of Science,* vol. 23, p. 1013.
[347] K.E. Rowan, 'Cognitive Correlates of Explanatory Writing Skill: An Analysis of Individual Differences', *Written Communication*, vol. 7, 1990, p. 316.
[348] Ibid.

showing how and why a group of scientific facts, findings, ideas, or concepts are related.[349]

By looking for these types of explanations in Tanaboonsombat's articles on the theories, demonstrates that the articles have accomplished, to some extent, in providing the 'elucidating explanation' and 'quasi-scientific explanation' of the equation. Tanaboonsombat begins with explaining the correct term of the theory in Thai language. Next, he moves on to explaining the differences between the Theory of Special Relativity and the Theory of General Relativity; then, he explains the meaning of the equation. Although those articles use elucidating explanations, since the writers tried to cover every theory and principle that Einstein worked on, they could not explicate in depth any one theory.[350] I will not concentrate upon the scientific explanation in the newspapers as it is not central to my thesis.

Another characteristic in the account of Einstein's theories is a substantial number of technical terminologies presented without definitions when mentioning the concepts, i.e. 'Thitsadee quantum [Quantum Theory]'; 'kan klueanti Brownian [Brownian Movement].[351] Moreover, some English terminologies were used without translation e.g. 'light quantization' and 'photoelectric effect'.[352] Another *Matichon* article on 21 February 2005, mentions a few principles e.g. 'prakodtakan photoelectric [Photoelectric effect] and the 'Thissadee Heng Suppasing [Theory of Everything]' without providing any further information.

---

[349] Rowan, 1990. p.317
[350] *Krungthepturakij* 24 March 2005, p. 5 and *Krungthepturakij* 31 March 2005, p.5.
[351] *Matichon* 15 February 2005, p.33.
[352] 'Naeo khit atsachan khong burut mahatsachan Einstein (1)', *Krungthepturakit*, 24 March 2005, p. 5; 'Naeo khit atsachan khong burut mahatsachan Einstein (2)', *Krungthepturakit*, 31 March 2005, p. 5.

Without explaining these terms, it could be understood that the newspaper presumes that its readers understood these principles, however, in accordance with the understanding of the famous equation, comprehending Einstein's theories would require a certain level of intellectual background in science and mathematics. Another way of viewing the practice is the writers may have thought that the terminologies are not important to the comprehension of the stories, or in a worse scenario, the practice reflects the writers' lack of understanding in those terms. As the sample articles are quite small, these features are only my observations rather than a generalization.

Next, my observation shows that there is an attempt to associate Einstein's principles and concepts to everyday life in the newspaper accounts. The articles describe Einstein's theories that were adapted to invent some devices that can be found in everyday life. It can be read as the writers' attempt to make Einstein's theories more accessible to the readers. For example, *Matichon* on 15 February 2005, gives some examples of appliances that were invented based on Einstein's theories; it says 'without Quantum theory we would not have had computers; without the General Theory of Relativity, we would not have had GPS (Global Positioning System). Another example is an article by *Matichon* on 21 February 2005, titles 'Theknoloyi Nathueng Moradok chak Mansamong khong Einstein [Amazing Technology: Outcomes of Einstein's brain], it describes a few appliances were invented from the principles discovered by Einstein, e.g. sensor, solar cell street lamps, laser and GPS.[353]

Thus far, I have shown a few features in the newspaper articles focusing on Einstein's theories. As mentioned there are few articles on the topic, however, they

[353] Kamonthip Thanakitrungrueang, 'Theknoloyi na thueng moradok chak man samong khong Einstein [Amazing Technology: outcomes of Einstein's brain]', *Matichon*, 21 February 2005, p. 32.

seem to have shown some similar challenges in communicating Einstein's theories in universal popular accounts. Einstein himself commented on the problem:

> *Anyone who has ever tried to present a rather abstract scientific subject in a popular manner knows the great difficulties of such an attempt. Either he succeeds in being intelligible by concealing the core of the problem and by offering to the reader only superficial aspects or vague allusion…*[354]

The Quotations

Einstein's quotations have been one of the key themes in popular accounts of his life and work, popular books in particular, as mentioned earlier. I found that newspapers have played a significant role in disseminating Einstein's quotations as well. The articles covering Einstein's quotations can be divided into three categories according to their focuses: first, the articles focusing on biography or events; second, the articles which have the quotations as their central themes; and third, the articles focusing on various subjects unrelated to Einstein, however, they use Einstein's quotations to attract the readers. The examples of the first categories are *Matichon*'s articles on 15 February 2005; it begins with the quotation 'Gravity is not responsible for people falling in love' as an opening sentence then it goes into Einstein's works.[355] The second category, there are two articles focusing on disseminating the quotations, *Krungthepturakij* on 11 June 2005 and another article published on 24 July 2003.

The third group of the articles mentioning quotations are the articles concentrating on other areas rather than science or Einstein e.g. politics, and culture.

---

[354] Fahnestock cited Einstein in Fahnestock, J., 1998. 'Accommodating Science: The Rhetorical Life of Scientific Facts' *Written Communication*, 15(3), pp.330–350.

[355] *Matichon*, 15 February 2005, p.33

For example, the article by *Matichon* on 8 November 2006, centres on the biography of the best-known Thai royal poet, Sunthorn Phu. Although, arguably the content does not relate to Einstein, however, Einstein's famous quotation was cited in the introduction.[356] The practice is strong evidence of how widely Einstein was cited in the Thai popular accounts.

The quotation most referred to is 'Jintanakan samkan kwa kwamru (Imagination is more important than knowledge)'. It was referred to in a number of articles e.g. *Krungthepturakij* 11 June 2005, 10 March 2005, *Matichon* 15 February 2005 and 30 September 2005. Interestingly, the alleged quotation regarding Einstein's admiration of Buddhism was not mentioned in any of my sampling newspaper articles, while the quotation is a key theme in the popular book accounts of Einstein, as discussed previously.

Many of the articles on Einstein are likely to refer to at least one of Einstein's quotations. *Matichon*, in particular, has a strong tendency of inserting the quotation in its articles. As shown, *Matichon* has a tendency to cover Einstein's soft stories e.g. biography and quotations, while *Krungthepturakij* concentrated on his theories.

The dissemination of Einstein's photographs

Newspapers have played a significant role in popularising Einstein's photographs. To a certain extent, the middle-class Thai's familiarity with Einstein's face may be attributed to the newspapers. The majority of the sampling articles contain photographs of Einstein; forty articles out of fifty-eight provide at least one photograph of Einstein.

[356] Suchit Wongthet, 'Watthanatham Khamkhit khwamru chak Sunthon Phu thueng Einstein [Cultural Perspective and Knowledge from Sunthon Phu to Einstein]', *Matichon*, 8 November 2006, p. 34.

The articles without the photograph are not focusing on Einstein but the writers used Einstein to attract the readers' attention as mentioned earlier. The articles allocated in the news section tend to face the constraint of space therefore, they do not have place for the photographs. Some examples of these articles are *Krungthepturakij* 12 April 2005 with title 'Nakwit Thaphisut Thitsadi Einstein mi kho Phitphlat [Scientists may have Found some Errors in Einstein's Theories]'.[357] Moreover, *Matichon* 24 September 2011 titles 'Cern Koenphop Anuphak reo kwa Saeng: Phlikchom Thitsadi dang Einstein [Cern Discovered a Particle Travels Faster than Light]'.[358] These articles report on unscheduled events, in these cases they report the new discoveries which relate to Einstein's theories.

The articles focusing on Einstein's theories, biographies, and the outcomes of his theories, have strong tendency to add his photographs. Moreover, *Matichon* presented Einstein's photographs more than *Krunthepturakij* while *Thairath* did not present any of Einstein photographs. A concrete example of the high value *Matichon* gave to the photographs is an article published on 21 February 2005 devoting one third of its space to photos of Einstein. It presents the photographs of Einstein sticking his tongue out, riding a bike, and smiling. These images appear in other articles in *Matichon* as well, e.g. two articles on *Matichon* 15 February 2005. *Krunthepturakij* is inclined to insert photos of a more serious nature, such as, the photograph of him playing violin, and the photograph of Einstein writing his famous equation on a blackboard. A comparison between these two newspapers demonstrates that *Matichon* is apt to depict Einstein in a light-hearted manner while *Krunthepturakij*'s depiction of Einstein is more intellectual.

---

[357] *Krungthepturakit*, 12 April 2005, p. 9.

[358] *Matichon*, 24 September 2011, p. 30.

4.2.2 The coverage of other scientists (foreign and Thai)

This chapter's main argument is to demonstrate Einstein's high profile in Thai society. I have established in the latest sections that Einstein's coverage in Thai newspapers has been somewhat substantial, despite the small coverage of science in Thai newspapers. To add more evidence to support my argument, this section will investigate the Thai newspapers' coverage of the other scientists as well as that of Einstein. This section is split into two subsections, the first deals with foreign scientists which also are well known in Thai popular accounts, although they may not be at the same level as Einstein. The second subsection will focus on the account of Thai articles which relate to these scientists.

The coverage of Newton, Darwin, and Hawking

As shown earlier, popular book accounts contain significant profiles of other international scientists, although at lower level of interest than Einstein's account. This section shows a comparison analysis between the Einstein coverage and the coverage of Newton, Darwin, and Hawking. The comparison will shed some light on the determination of Einstein's high profile. I present the number of articles on Newton, Darwin, and Hawking of three newspapers, *Matichon*, *Thairath*, and *Krungthepturakij* from 1997-2011 in Table 4.3.

Table 4.3. Articles on Newton, Darwin, and Hawking from 1997-2011**.**

	Matichon	*Thairath*	*Krungthepturakij*	Total
Newton	2	2	2	6
Darwin	2	6	5	13
Hawking	9	5	2	16

Isaac Newton (1642-1727) is, beyond question, a world-famous scientist. However, he was featured only in six articles in three Thai newspapers from 1997 to 2011. Each newspaper featured Newton evenly with two articles. Charles Darwin is one of the few foreign scientists to be featured with moderate regularity in Thai newspapers. *Thairath* featured six articles on Darwin between 1996 and 2011. These three articles were published in 2009, the bicentenary of Darwin's birth, the British Council of Thailand had coordinated with the Thai National Science and Technology Agency (NSTDA) to organize the activities to celebrate the event which was part of the international 'Darwin Now' exhibition. *Matichon* only featured articles on Darwin twice during the period of this study, 1996 to 2011, fewer articles than both *Thairath* and *Krungthepthurakit*. *Krungthepthurakit* is the most informative source on Darwin among the three newspapers. Among its five news reports and columns on Darwin published between 1996 and 2011, three were published in 2009. *Thairath* covered him five times in my period of study with four of these stories covering Hawking's warning about aliens attacking. *Krungthepthurakit* published two articles on Hawking. Among the newspapers I have selected, Hawking-related articles have been covered the most in *Matichon* with nine articles in total: three articles in 2004; two in 2006; and one each in 2007, 2009, 2010, and 2011.

Among these three scientists, Hawking is featured the most followed by Darwin and Newton. Darwin and Hawking's coverage differ in scale. Given that Hawking is the only scientist among these three scientists who is alive could play a crucial role in his having the highest number of articles. Darwin's coverage increased in 2009 when it was the international celebration of 200 years of Darwin's birth and 150 years after the publication of *On the Origin of Species*. The coverage of Darwin and Hawking is greatly

lesser than Einstein's coverage. Einstein was featured in fifty-eight articles while Darwin and Hawking were covered in thirteen and sixteen articles, respectively. The figures demonstrate that comparatively Einstein is a prominent scientist in Thai society. The content of these articles will be discussed in Chapter 5, and I will draw on the comparison between Newton, Darwin, and Hawking articles' content and Einstein's coverage to argue that Einstein is the only foreign scientist who has been indigenized in the press.

The coverage of awarded Thai scientists in the press.

To add more evidence to my argument on the high profile of Einstein, and to show that Einstein's coverage is greater than other scientists despite the fact that he was a foreigner, I examine the press's coverage of Thai scientists and compare it with Einstein's coverage. My research shows that Thai newspapers are likely to cover the Thai scientists who were granted two major science awards, the 'Outstanding Thai scientist' and the 'Somdet Chaopha Mahidol (Prince Mahidol)' award.

The 'Outstanding Thai scientists' award is announced every year on Thai National Science Day, 18 August. The prize was first presented in 1982. The award is given to a Thai scientist who has conducted exceptional research in their field which has also been recognized on the international stage. The award aims to promote science researchers in fundamental science. The laureate is rewarded 400,000 Baht (roughly £8,000), along with a royal plate and certificate.[359] The award is organized through collaboration with governmental agencies and departments and the private sector. The private sectors are the Foundation for the Promotion of Science and Technology under the Patronage of

[359] Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King, http://www.promotion-scitec.or.th/outsciaward_step.htm, [accessed 5 April 2015].

His Majesty the King, the Science Society of Thailand, and the Siam Cement Group.[360] The government agencies are the National Science and Technology Development Agency and the Thailand Research Fund. The Somdet Chaopha Mahidol (Prince Mahidol) award was established by the current King. It is granted to an outstanding individual or institute in the field of medicine and public health. It was established by royal permission in honour of Prince Mahidol of Songkla, the King's father. Princess Maha Chakri Sirindhorn acts as a representative of the King, is President of the Foundation, and hosts an annual banquet in honour of the laureates after the ceremony.[361]

My research shows that *Thairath*, *Matichon*, and *Krungthepturakij* covered these awards ceremony routinely. *Thairath* reports on the prize winners almost every year, but with only one article a year. *Matichon* and *Krungthepturakij* regularly cover the stories of awards' winners. These newspapers' coverage of the 'Outstanding Thai scientist' and the 'Somdet Chaopha Mahidol (Prince Mahidol)' awards, have been done routinely. Although, these articles were presented with the same formatting almost every year, I found that none of the three newspapers published details of the personal or working lives of the winners, details that might inspire a younger generation to follow in their path. On the contrary, Nobel Prize stories presented in Thai newspapers are more vivid. One possibility is because the main source of material on Nobel Prize awards is foreign press agencies, which have science journalists working for them. The Thai awards are government's efforts to encourage Thai scientists by showing their great achievements to the public, yet little is written on the scientists themselves. It seems

[360] ibid

[361] Prince Mahidol Award Foundation. http://www.princemahidolaward.org/royal-patronage.en.php, [accessed 5 April 2015].

that the government has established publicity machinery to promote these awards in both newspapers and popular books which I have mentioned earlier. The scientists', awarded 'the outstanding scientists' distinction, biographies and studies will be featured in popular books published with the government's subsidisation. These articles and popular books on the 'outstanding scientist' and the 'Somdet Chaopha Mahidol (Prince Mahidol)' awards are likely to be the only coverage of Thai scientists in print. Therefore, it demonstrates that in brief the government takes responsibility of the promotions of Thai scientists.

4.3 Einstein in Pantip online forum

This section investigates the Pantip users' interest in Einstein, and how Einstein was discussed in Pantip. In order to determine the account of Einstein in Thai society, I compare Einstein's account with the accounts of scientists, Newton, Darwin, and Hawking.

4.3.1 The Pantip's threads on Einstein

This section investigates the discussions of Einstein on Pantip in both quantitative and qualitative aspects. I began by determining the figure of the threads that talked about Einstein on the site and then classified the main themes of discussions on the famed scientist.

I searched the Pantip archive using the term 'Einstein' in Thai and English language, in particular Wahkor café and Sadsana café, to keep my search consistent with other chapters. The results show that there were eighty-eight threads discussing Einstein, which is comparatively greater in comparisonto the number of threads talking about other scientists. Given there were nine threads talking about Newton, thirty-three

threads and seventeen threads talking over Darwin and Hawking respectively. I shall return to emphasise the accounts of these scientists in the next section. The threads talking about Einstein can be characterised to three main categories: Einstein's works, the indigenization of him, and his characteristics.

Table 4.4 Number & Percentages of Threads discussing Einstein

Topic	No. of threads	Percentage (%)
Theories/ work	36	42%
The indigenization	29	33%
Characteristic	12	13%
Other	11	12%

As shown in Table 4.4, forty-two per cent of the total threads regarding Einstein discussed his theories, thirty-three per cent talked over the indigenization of Einstein. The third most discussed theme of the threads about Einstein is his characteristic which the majority shows the interest in the indigenization of Einstein's personality.

Einstein's work

Einstein's work was discussed extensively in Wahkor café; there are two categories of the threads talking about Einstein's theories. First, the threads asking for explanations of Einstein's theories and formulae. Second, the threads initiated to explain Einstein's theories. The former category is the majority of my sampling threads. The threads asking for explanations often begin with simple questions, for instance, 'Can anyone help me by explaining the formula E=mc2, please?' or 'I had some background in science but I do not understand the theory of relativity. All I can gather is that it is about time and speed of light. Could anyone explain it for me?' Another example of the thread asking about the formulation, 'From the formulation E=mc2, why energy can only

change to speed of light, not anything else? The replied posts to the threads can be roughly identified to three groups; first category is the posts offering some Internet links to useful resources so the participants who initiated the threads could find more information. The second group is the posts trying to answer questions in the original posts by explaining the theories. The third group are those that replied to posts expressing the interest in the theories however at the same time demonstrating concern regarding the challenges of understanding the theories. The concern can be seen in comments such as 'I see'; 'It is very interesting'; and 'It is very difficult for me' which can be commonly found in the threads regarding Einstein's theories.

Similar kinds of questions were asked repeatedly in the threads posted in my sample threads clearly demonstrating the interest in Einstein's work. Moreover, these threads asking for more explanations regarding Einstein's theories, to some extent reflect the lack of serious content in the account of Einstein in other media outlets i.e. popular books and newspapers as my findings in the previous sections have shown. I return to the aspect in the discussion section.

Second category of the threads on Einstein's theories were the threads focusing on shared knowledge; the users initiated these threads to share scientific information rather than ask for explanations which was the case in the former category. These threads tend to be more active than the threads asking for explanations on Einstein's theories. Each thread contains more replied posts than the threads asking for explanations. For example, Cryptomnesia, a nickname, posted a thread with the title

'Time machine'.[362] The thread begins with brief explanations of Einstein's Theory of Special Relativity and the Theory of General Relativity that Cryptomnesia believes that they are the foundation for his further descriptions on the time machine. The thread is very active given it contains a hundred and twenty-seven posts; seventeen posts were replied by Cryptomnesia himself while the rest of comments were posted by the other participants. Another concrete example for an active thread, initiated by 'cyberjuf' talked about the Theory of Relativity. The thread contained one hundred and eighty-five replied posts demonstrating significantly strong interest in the theory. The thread is informative with a significant number of comments contributing to the thread.[363] Oppositely, the threads asking for explanations on the theory of relativity had limited replies. For instance, a thread by Duke asking 'how to make sense of the theory of relativity?' had only eleven replies.[364] As well as the Theory of Relativity, the black hole and the formulation E=mc2 received substantial interest from the Pantip users e.g. a thread by SpriritDreamInside, asking for a description of black hole; and another thread started by Harmonika asking 'how to grasp the descriptions of the theory of relativity and wormhole.'[365] The majority of the replied posts are informative, particularly the explanations of Einstein's theories. It is widely known that Einstein's theories are not easy to explain, as I have mentioned some universal research studies on the challenges

---

[362] Crytomnesia, Pantip: X7459842, 2009, http://topicstock.pantip.com/wahkor/topicstock/2009/01/X7459842/X7459842.html, accessed 23 May 2015.

[363] Cyberjuf, Pantip: X9465888, 2010, http://topicstock.pantip.com/wahkor/topicstock/2010/07/X9465888/X9465888.html, accessed 12 April 2015.

[364] Duke, Pantip: X2771575, 2004, http://topicstock.pantip.com/wahkor/topicstock/X2771575/X2771575.html, accessed 12 April 2015.

[365] SpiritDreamInside, Pantip: X3339534, 2005, http://topicstock.pantip.com/wahkor/topicstock/X3339534/X3339534.html, accessed 12 April 2015 and Harmonica, Pantip: X3452119, 2005, http://topicstock.pantip.com/wahkor/topicstock/X3452119/X3452119.html, accessed 12 April 2015.

of scientific explanations in texts in the previous sections. I have also shown that the popular account of Einstein's theories in Thailand correlated with the international account, particularly the challenge of scientific explanations. My examination of the threads on Einstein's theories demonstrates that it seems to be the case for explaining the scientific knowledge in the discussion forum as well. However, since the majority of the replied posts attempt to explain the theories; it shows that the Wahkor participants who joined the discussion on Einstein's theories, have background in science to some extent. In conclusion, the threads on Einstein's theories demonstrates the intellectual discussion.

The indigenization of Einstein

The second most discussed topic in my sample threads is the indigenization of Einstein, with the themes such as his alleged quotations, his possible religious affiliation, and his depiction in *Einstein Phop Phraphuttachao Hen*. It is important to note that, the specific book on the indigenization of Einstein was discussed extensively in the sample threads. Twenty out of total twenty-nine threads on the indigenization of Einstein talked about the book, *Einstein Phop Phraphuttachao Hen*, demonstrating the Pantip users' significant interest in the indigenization of Einstein and the Science-Buddhism dialogue, the topic that I will elaborate upon in Chapter 5.

Understandably, the most discussed topic regarding Einstein's theories correlates with the theme that Wahkor café was designed for, which is to open a forum for the participants to express and interchange scientific knowledge related topics. However, my examinations of these threads shows that the threads on Einstein's theories were discussed less than the threads on the indigenization of Einstein. It is

evidenced in the number of posts on these two categories of threads, in average the threads regarding Einstein's theories contain less replied posts than the threads on Einstein's indigenization. Yet there are a few threads that actively discussed Einstein's theories as mentioned.

A potential cause for the less active discussion on the theories than the indigenization of Einstein, could be the challenge of understanding and explaining Einstein's theories. As a consequence, these threads require the participants have some background in science in order to be able to join the debate, on the other hand, the discussions regarding the Science-Buddhism dialogue and the indigenization of Einstein could be perceived as easy topics to discuss. Since the majority of Thai Pantip's users are Buddhists, the participants could to some extent think that they could contribute to the threads from the Buddhists' view. The examination of the Pantip's threads regarding Einstein's connection to Buddhism, his quotations, and characteristics will be elaborated in the next chapter, Chapter 5 focusing on the indigenization of Einstein.

4.3.2 The Pantip's threads on Newton, Darwin, and Hawking

This section demonstrates a comparative analysis between Einstein and three scientists who I have conducted a comparative search with Einstein in other sections. I investigate the Pantip users' interest in Newton, Darwin and Hawking. My searches show that there were nine threads on Newton, forty threads and seventeen threads on Darwin and Hawking, respectively. Among these three scientists, Darwin was discussed the most in the Pantip online forum, however it is clear that Darwin's discussions are significantly less than those of Einstein's. Given there were eighty-eight threads discussed on Einstein-related stories while forty threads talked over Darwin. Although

the number of the threads on Darwin and Einstein are greatly different, however, their threads shared a similarity on the connection to religions. While Einstein was associated with Buddhism, the majority of Darwin's threads was discussed in relation to Christianity and a few threads talked about him in connection to Buddhism. The threads on Newton and Hawking focus on their works without connecting them to religions, either Christianity or Buddhism. Among these three scientists, Newton was discussed the least on Pantip, while Darwin was the most. There were nine threads on Newton. The threads were on three main themes: Newton's laws, his personality, and the comparison between Newton and Einstein, correspondingly. It is understandable as he came from the oldest era among these three scientists.

It is striking that Darwin and Hawking were discussed in relation to religions (Buddhism and Christianity) by the Pantip users. However, it is important to note that the discussions regarding Darwin and Hawking in relation to religions were done with a few significant differences to Einstein's discussions. Forty threads on Darwin can be classified to two main categories: the discussions about the Evolutionary Theory and the discussion about the compatibility of the Evolutionary Theory and religions (Christianity and Buddhism). Twenty-six threads were on the Evolutionary Theory; ten threads were talking about the religions, and the rest of the threads (four threads) were on miscellaneous i.e. his biography and his traveling.

There were ten threads on the compatibility of Darwin's evolutionary theory and religion out of forty threads regarding him in total. Ten threads associating with religions can be divided to two groups: four threads were Buddhism related and six threads Christianity related. The figure of threads clearly indicates the difference of focal points

between Einstein and Darwin. Although Darwin was also related to religion, however, he was more likely to be connected to Christianity rather than Buddhism which is different to Einstein. It is fair to say that there were attempts to associate Darwin's Evolutionary theory with some Buddhist concept e.g. attempts to connect the development of creature with a teaching in the Sutta Pitaka (the first of the three divisions of *Tipitaka* or the Pali Canon). However, the connections were not emphasised to make the claims convincing. The concrete evidences are threads by 'Chalermsak' who posted two threads with similar titles, 'the theory of Evolution and Buddhism'.[366] He tried to demonstrate the similarity between the theory of Evolution and *Tipitaka*. 'Chalermsak' claims that Buddhism is compatible with the Evolutionary theory in two aspects. He claims 'both views the origin of human as natural process, and both believes that human creates himself.' Chalermsak's initiated post does not offer clear explanations on the compatibility he claims hence it is challenging to follow the argument. As a result, the thread did not attract much attention from the users; it contained only six replies which clearly suggests that the topic is neither active nor of interest to the users. Moreover, three of the replied posts did not discuss the initiated topic but derailed greatly by talking about other topics. Another thread showing the interest in the compatibility between the theory of Evolutionary and Buddhism, was initiated with a question 'Is the Evolutionary Theory compatible or incompatible with Buddhism?'[367] The thread attracted substantial attention from the users as it contains

---

[366] Chalermsak, Pantip: Y5396155, 2007, http://topicstock.pantip.com/religious/topicstock/2007/05/Y5396155/Y5396155.html, accessed 18 January 2015.

[367] Dummommam, Pantip: Y11442530, 2011, http://topicstock.pantip.com/religious/topicstock/2011/12/Y11442530/Y11442530.html, accessed 23 May 2014.

twenty-four replied posts. Although the thread starts with an open question which allows the participants to freely express their views, however, the majority of the replied posts do not contribute to the initiated post; they rather commented that they believe the Evolutionary Theory is compatible with Buddhism.[368] Although the thread on Darwin talked about him in relation to Buddhism, which is also the case for Einstein, however, the level of interest given to Darwin is significantly lesser than the interest express to Einstein. More importantly, the attempt of indigenizing Darwin only focuses on his theory not his personality, an important aspect in the attempt to indigenize Einstein. I return to this point later.

Next, I examine the Pantip threads on Hawking. As mentioned there were seventeen threads regarding Hawking. The Pantip users had demonstrated their interest in Hawking's view of God. For example, the thread initiated by 'Please', asking 'what is your view on Hawking's saying that God did not create that universe?'; another thread initiated by 'Chaz' asking 'why Hawking does not believe in God?'.[369] There is only one thread on Hawking's view and the Buddhist's concept of rebirth while the majority of the threads are focusing on Hawking and God. The thread initiated by 'Heretic' asked 'Would Hawking be ashamed for denying the concepts of rebirth, heaven and hell if he finds out that the modern scientists accept these concepts?'.[370]

---

[368] Dummommam, 2011. For example, comment number 2-9 in the thread.
[369] Chaz, Pantip: X2604478, 2010, http://topicstock.pantip.com/wahkor/topicstock/X2604478/X2604478.html, accessed 10 July 2014. and Please, Pantip: X9648710, 2010, http://topicstock.pantip.com/wahkor/topicstock/2010/09/X9648710/X9648710.html, accessed 10 July 2014.
[370] Heretic, Pantip: X10819520, 2011, http://topicstock.pantip.com/wahkor/topicstock/2011/07/X10819520/X10819520.html, accessed 10 July 2014.

My investigations on the Pantip threads regarding Newton, Darwin and Hawking demonstrates that the middle-class Thai's interest in Einstein exceeds those of Newton, Darwin and Hawking. Moreover, the attempts to indigenize Einstein is a distinctive practice as I have shown that although there were attempts to connect Darwin and Hawking to Buddhism, however, the indigenization of Darwin and Hawking were conducted to a substantial lesser degree than the indigenization of Einstein. It is evidence in the small figure of threads on the indigenization of Darwin and Hawking. Most important evidence is the level of the indigenization, Einstein was claimed to be Buddhist, practiced Buddhism to an outstanding level, and he admired Buddhism to be 'the religion that can cope with the future' by some authors, yet these claims were created without explicit sources. However, some middle-class Thai are willing to believe in these claims. On the opposite, as shown that the discussions on Darwin and Buddhism focus at the Evolution theory rather than Darwin's characteristics. Similarly, the threads on Hawking's focal point was Hawking and God.

As I have mentioned, the threads on Darwin and Hawking and religions were significantly less than Einstein's threads. However, it reflects that religious-related topic tends to be of significant interest to the Pantip users who represent the middle-class Thai to some extent.

4.4 Discussion

This chapter examines the popular account of Einstein in contemporary Thailand, drawing on three major media outlets: books, newspapers, and the Pantip online discussion. My examination shows that the Thai popular account of Einstein, popular books in particular, show that his biography was selectively portrayed, the account tends

to explore his characteristic, quotations and biography more than engaging with his work. The main themes of Einstein's depiction in Thai popular account are less focusing on his theory of relativity and quantum theory.

The majority of the popular books regarding Einstein's theories on Thai market are translations; it was as late as 2000s that Thai authors began to write about Einstein's theories. It is noted that although a Thai author had written about Einstein first time in 1999, however, the book contains largely although not entirely Einstein's biography.[371] It was not until 2002 that a book dedicated to explaining Einstein's theories to the public was published.[372] The absence of the Thai author's role in Einstein's popular account before the 2000s could be because the publishers feared that the genre may not sell well. As Siripong Wittayawirot, the editor-in-chief of the Matichon Publishing, one of the major publishers on popular science books in Thailand, expressed, he was surprised that the books on Hawking and Einstein, or serious popular books, sold quite well.[373]

According to the Chulalongkorn University Library archive, the number of more serious popular books and academic books on the theory of relativity increased in the 2000s. It is possible that the publication is the result of the World Physics Year event in 2005. This data needs to be interpreted with caution as the pedagogic account of Einstein and his theory is not the focus of my thesis, I focus on the popular account of Einstein.

---

[371]Krongpaen Chaichanasan. *Chewaprawat Albert Einstein [Albert Einstein Biography]*, Bangkok: Delphi, 1999.

[372]Buncha has written a few books on Einstein's biography and theories i.e. *Thitsadee Sampattapap Albert Einstein* (Albert Einstein's Relativity Theory).

[373] Siripong Wittayawirot, the editor-in-chief of the Matichon Publishing, interviewed by Chinnalong, Bangkok, 2011.

Thai seem to appreciate and are fascinated by Einstein's work, however, they do not tend to engage with his theories as other countries. In comparison to the US, the country whose press arguably has played the most significant role in creating Einstein as a world scientist celebrity, the appreciation of Einstein or the popular account of him tends to start from the Theory of Relativity. As Missner's investigation shows, although both Einstein and the Theory of Relativity became famous in the US however, it is the theory that has made a strong impression on the public first, and Einstein who created the theory has received great interest because of that.[374] For the case of Thailand, I argue that the Thai public's interest in Einstein, to a large extent, is a result of the press's indigenization of him, his alleged quotation in particular.

Among the three media outlets that I have investigated, the Pantip account demonstrates the most interest in embracing and engaging with Einstein's theories, as shown by a significant number of threads asking for explanations on Einstein's theories. The interest in the theories shown in the Pantip threads reflect that the nature of the forum which encourages its users to participate and ask questions. It is noted also, that although there was a substantial interest in Einstein's theories, the contributed explanations offered by the users were rather small. This could possibly be due to the nature of the Pantip discussion forum that encourages talk and opinion rather than descriptions. For explanation, books could be a better choice as they have a significant advantage to be used for developing extended explanations.[375]

---

[374] Missner, p.268

[375] J. Turney, 2004, 'Accounting for explanation in popular science texts--an analysis of popularized accounts of superstring theory', Public Understanding of Science, vol. 13, 4. pp. 331-346

My investigation confirms that Einstein is the scientist receiving greatest attention in the Thai popular accounts, particularly in print and the Pantip forum. Comparison analysis of the coverage of Einstein and other scientists confirm Einstein's high profile. I have conducted the comparative investigation between Thai's and other countries' accounts of Einstein to shed some light on Einstein's account. It shows that Thailand has relatively very little connection with him, until the 1990s when the popular books began to indigenize him.

There is no historical context of a close relationship between Einstein and Thailand. For example, there was never a plan for him to visit Thailand when he came to Asia and visited China, Japan, and Singapore. There is no evidence showing that Einstein had met any Thai public figure as the case of India when he met Tagore.[376] Hu reveals that there was excitement among Chinese regarding Einstein's theory in the early nineteenth century.[377] Moreover, there was an arrangement of inviting Einstein for the public lecture, although at the end, he had briefly visited China. Similarly to the Americans, as Missner reveals that they were just as excited by Einstein's theories.[378] The engagement of Einstein by the Thai seems to rest firmly on the media's indigenization of him, particularly, his quotation regarding Buddhism which was twisted to serve the purpose of demonstrating Buddhism's prestige. The middle-class readers have demonstrated strong interest to such depictions. The issue which is elaborated in Chapter 5.

In conclusion, there is no doubt that Einstein is an international celebrity scientist. The recognition of Einstein in Thailand is part of a worldwide trend; however,

---

[376] D L.Gosling, 2007, *Science and the Indian tradition: when Einstein met Tagore*, London: Routledge.

[377] D Hu, 2005, China and Albert Einstein: the reception of the physicist and his theory in China, 1917-1979, Cambridge: Harvard University Press.

[378] Missener, 1985.

I argue that the worldwide trend is one of the factors but it is not the main factor influencing the high profile of Einstein in Thailand. I argue that it is the popular books' depictions of Einstein engaging with Buddhism that plays a strong role in his fame in Thai landscape. It is well known that Einstein is a man with many myths. The Thai popular accounts of Einstein contain some myths and tales similar to universal myths of Einstein. The highlight of his myth in Thailand is the myth connecting him with Buddhism.

Chapter 5

The Indigenization of Einstein in the Thai Popular Account.

Figure 5.1: A poster saying 'when Einstein is dressed with yellow robe.[379]

This chapter investigates the indigenization of Einstein in Thai print media and the Pantip online discussion board. As demonstrated in Chapters 3 and 4. Einstein has a comparatively high profile in Thailand, and the science-Buddhism dialogue is a theme of significant interest to the middle-class Thai. These two findings strongly suggest a direct connection between Einstein's high profile and the interest in science-Buddhism dialogue thus, this chapter examines such connection.

My main theme in this chapter is the popular account of Einstein's indigenization. Therefore, I will examine the process of indigenizing Einstein in the media. I will show that the indigenization of Einstein was strongly demonstrated in the popular account, particularly in books, newspapers, and the online discussion forum. Perhaps, it is not surprising that Buddhism was employed in the indigenization

[379] A poster advertises a lecture by Buncha Tanaboonsombat, held by Thammsat University student in 2009.

considering that more than ninety-five percent of Thai population are Buddhist; to a certain extent, Thai's conceptual views would have involved Buddhist's terms and concepts.

Moreover, as discussed in Chapter 2, Buddhism has a long history of encounter with the West, especially in the nineteenth century. This chapter will argue that the media depicts Buddhism/ Buddha as superior to Einstein and science. To some extent the practice is comforting and reassuring considering the period when the books focusing on the indigenization of Einstein proliferated, as Thailand was facing the aftermath of the 1997 financial crisis and political unsettlement. The 1990s was the period that globalisation was discussed and criticised by some leading thinkers in Thailand. To a certain extent, the economic crisis seems to encourage the rise of anti-Western sentiment, especially the 1997 crisis. In addition, as discussed in Chapter 2, nationalism enhancement has long been the scheme that monarchs and the government employed since the nineteenth century. These contexts have played an integral role in the rise of the science-Buddhism dialogue focusing on the indigenization of Einstein in popular accounts.

In this chapter through a review of three media-- popular books, newspapers, and Pantip— the process of indigenized Einstein in the Science-Buddhism dialogue is examined in three main sections. The period discussed is between 1990s-2010s, as main themes on Science-Buddhism dialogue are discussed in Chapter 3, here I pinpoint when indigenization began in each medium, to shed light on the development and nature of Einstein's indigenization in Thailand.

5.1 The indigenization of Einstein in popular books

The Science-Buddhism dialogue books published after the 1990s tend to highlight an individual scientist, Einstein. The last decade of the twentieth century was the first time in the Science-Buddhism dialogue landscape that the focal point is on a specific scientist. The books employ Einstein in the Science-Buddhism dialogue in an aim to argue the superiority of Buddhism against science; moreover the arguments attempt to claim that the theories Einstein formulated on the nature of physics and the universe were already perceived by the Buddha two millennia earlier. These practices are entitled 'indigenization' in my thesis.

My examination of the books on the science-Buddhism dialogue published after the 1990s, as discussed briefly in Chapter 3, show that sales of books on the science-Buddhism dialogue had significantly increased, in conjunction with the practice of accommodating Einstein into their books' titles in the first decade of the twentieth-first century. Generating book titles that included 'Einstein' began with the first book, *Aisatai Nai Putthapratya (Einstein in Buddhism Wisdom)*, published in 2003. Since then, there have been seven other books on Science-Buddhism dialogue that use Einstein in their book titles,[380] for example, *Aisatai Nai Putthapratya (Einstein in Buddhism Wisdom)* and *Albert Einstein: Manut Lae A-pi-manut* (*Albert Einstein; Human and Superhuman Sides*).

[380] Tanu Kaewopat, *Einstein Nai Putthapratya (Einstein in Buddhism wisdom)*, Bangkok, Sukkhapharpjai, 2003; Jetsada Tongrungroj. *Aisatai kap Phuttha: pratchaya khukhanan thi banchop phopkan; Albert Einstein: Manut Lae A-pi-manut (Albert Einstein; Human and Superhuman Sides)*, Bangkok, Sukkhapharpjai, 2005; Suppawan P. Green, *Einstein Tam Phraputtachao Top (Einstein questioned, Buddha answered)*, Bangkok, Freemind, 2006. Som Sujira, *Einstein Pop, Phraputtachao Hen [Einstein found, Buddha had seen]*, Bangkok, Amarin, 2007. Akkara Suppachet, *Panyayan khong Einstein [Einstein's Intuition]*, Bangkok, The Institute of International Dhamma Research. Som Sujira, *Einstein Pop, Phraputtachao Hen II [Einstein found, Buddha had seen II]*, Bangkok, Amarin, 2010. Akkara Suppachet, *Panyayan khong Einstein [Einstein's Intuition]*, Bangkok, The Institute of International Dhamma Research.

Three among these seven books mention 'Einstein' and 'Buddha' in their titles. The practice is distinctive given Einstein is the only scientist whose name appears in the titles of popular books, which demonstrates that Einstein is clearly a significant icon in Science-Buddhism dialogue in Thailand. The mentioning of Einstein in their book titles suggests that these authors have taken Einstein as a prominent icon they use with an expectation of attracting Thai readers' attention. In fact the Science-Buddhism book market could be quite competitive since there are two books with similar titles which could confuse readers, *Einstein Tam Phraputtachao Top (Einstein Questioned, Buddha Answered)* by Suppawan Green[381] and *Einstein Pop, Phraputtachao Hen [Einstein Found, Buddha Had Seen]* by Som Sujira.[382] In my interview with Green, she expressed that she is not happy with Sujira's book title because it is very similar to hers. She added 'I am not saying that he copied my book's title but as you can see they are very similar and his book published after mine'.[383] However, in another interview of mine, Thevankarn Mungpanklang, the editor of *Einstein Pop, Phraputtachao Hen* confirmed the originality of the titles. He said that the book's author, Sujira, genuinely created the title that he agrees precisely demonstrates the book's main idea.[384] It is worth noting that these books with Einstein in their titles were written by non-academic authors. The authors' qualifications play important roles shaping the content of the books on Science-Buddhism dialogue, which I discuss in the later section.

Comparing the sales figures of the book titles between Thai and international markets demonstrates that Einstein has a stronger role in the Science-Buddhism

[381] Suppawan Green, 2006.
[382] S. Sujira. 2007.
[383] S. Green interviewed by Chinnalong, Birmingham, 2011.
[384] Thevankarn Mungpanklang, interviewed by Chinnalong, Nonthaburi, 2010.

dialogue in Thai landscape. Einstein appears on the book titles published in Thai book market more than the international market. There is only one popular book on the Science-Buddhism dialogue with Einstein in its title on the international market, *Einstein and Buddha: The Parallel Saying*. On the contrary, as mentioned, the Thai book market contains at least seven books with Einstein in its titles.

So far I have discussed an overview of the indigenization of Einstein in popular books, next I will examine the major themes in the indigenization. There are three main themes. First, the theme regarding the Einstein's alleged quotation regarding Buddhism; second theme is, the claims of the compatibities between Einstein's theories and specific Buddhist teachings. The third theme is the claim that Einstein understood/ practiced Buddhism or Einstein had applied Buddhist's concepts in his work process.

5.1.1 Einstein's alleged quotation regarding Buddhism

I found the books published after the 1990s are likely to indigenize Einstein with stronger degree compared to the books published earlier. Although the earlier books mention Einstein theories to some extent, the indigenization of Einstein has become the highlight in the books on Science-Buddhism dialogue published from 1990s onwards.

The indigenization of Einstein through publicizing his quotation was inspired by a Buddhist scholar monk, P.A. Payutto, although it seems that he did not intend to indigenize Einstein in his lecture and book as I elaborate upon. As mentioned in Chapter 3, the books on the Science-Buddhism dialogue were written as 'popular books'; although there were a few academics who 'hopped on the band wagon' by writing books on the theme. My research shows that the authors' qualifications played a major role in shaping the content of the Science-Buddhism dialogue books. There is a tendency by

academic authors to be more careful in making claims of the compatibility between science and Buddhism than non-academic authors. The academic authors avoid indigenizing Einstein unless they can provide accurate evidence to support their claims. However, one aspect of the indigenization was first started by a Buddhist scholar, P.A Payutto in his lecture and *Puttasatsana Nai Thana Pen Raktan Khong Wittayasat [Buddhism as the Foundation of Science]* which, to some extent, was a prominent inspiration for other authors to indigenize Einstein. My examination shows that books published later in the aforementioned period applied Einstein's quotations as highlights to their arguments on the superiority of Buddhism over science.

To support my own argument, I provide some background on P.A. Payutto and his influential lecture. P.A. Payutto, is a prominent Buddhist monk scholar and prolific writer with an extensive list of books on Buddhism, some of which have been translated into English. The lecture was held on the 'National Science' day in 1991. The lecture was four and a half hour longs with at least three hundred in attendance in the main lecture room. There were some audience members watching outside the main lecture theatre via CCTV. In addition, the lecture was broadcast on the radio. These channels of distribution strongly suggest that the lecture was widespread and well-known to the public. Moreover, the lecture was intriguing as it was most likely the first time that a Buddhist monk gave a lecture to scientists regarding science. P.A. Payutto stated that 'some people were surprised that the organizer invited a Buddhist monk to talk about science; it seems impossible'.[385] He added that some people have a view that Buddhism and science are two separate sets of thought. P.A. Payutto's highly respected profile and

[385] P.A. Payutto, 1992, p. 2

the widespread popularity of his lecture are convincing to support my claim that he, alone, inspired the trend of indigenizing Einstein in Thailand. Although, he does not show the attempt to indigenize Einstein in his lecture and book.

Next, I explore how Einstein's genuine quotations went from a genuine quotation to alleged quotation. As mentioned Einstein's quotation regarding Buddhism first appeared in the popular book account when P.A. Payutto referred to them in his lecture and book. P.A.Payutto has referred to two of Einstein's quotations, and the genuine quotations he cited were distorted by other authors. The alleged quotation is one of the highlighted themes in the indigenization of Einstein in the Science-Buddhism dialogue. The genuine quotations that P.A.Payuttto refers to are: '' ... cosmic religious feeling is the strongest and noblest motive for scientific research'' and '' ... Buddhism, as we have learned especially from the wonderful writings of Schopenhauer, contains a much stronger element of this ...''[386] He states that he paraphrased these quotations to support his view that 'Buddhism is the foundation of science'.[387]

Before I move to examine the alleged quotations, I will show the genuine quotations regarding 'cosmic religion' and 'Buddhism':

> *The beginning of cosmic religious feeling already appear at an early state of development, e.g., in many of the Psalms of David and in some of the Prophets. Buddhism, as we have learned especially from the wonderful writings of Schopenhauer, contains a much stronger element of this.*[388]

[386] P.A. Payutto, p. 74-75
[387] P.A. Payutto, p. 74
[388] Carl Seelig and Sonja Bargmann (edited), A. *Einstein: Ideas and Opinions: based on Mein Weltbild*. p.38

> *…I maintain that the cosmic religion feeling is the strongest and noblest motive for scientific research.*[389]
>
> *The religious geniuses of all ages have been distinguished by this kind of religious feeling, which knows no dogma and no God conceived in man's image; so that there can be no church whose central teachings are based on it…*[390]

These quotations are genuine with trustworthy sources as I show in my footnotes, however, the majority of the books on the Science-Buddhism dialogue do not refer to these quotations but they tend to distort the genuine quotation. There are only two books that present the genuine quotations, *Puttasatsana Nai Thana Pen Raktan Khong Wittayasat*, and *Aisatai Nai Putthapratya (Einstein in Buddhism Wisdom)*.[391] Other books on the Science-Buddhism dialogue present the alleged quotations. There are two versions of the alleged quotations presented in Thai books. The first of the alleged quotation appeared in 1996 in *Puttasat Kap Wittayasat [Buddhism and Science]*.[392] It is presented without reference as follows:

> *The future religion must be universal religion, free from belief in God or sacred items. Its principal should be based on faith, growing from experience rationally gained from both nature and science. Buddhism is the answer for the aspect.*[393]

Puttasat Kap Wittayasat could be the original source of the alleged quotation in the Science-Buddhism dialogue in Thai landscape as it is the earliest book where it is published. Similar to the quote presented in *Puttasat Kap Wittayasat,* another version

---

[389] C. Seelig and S. Bargmann (edited) p.39.
[390] Ibid., p. 38
[391] P.A.Payutto, 1992, p.74.; Tanu Kaewopat. 2003, p.1.
[392] C. Penwichit, 1996, p.1
[393] C. Penwichit, 1996, p. 1

of the quotation is presented in other books published later e.g. *Albert Einstein: Manut Lae A-pi-manut [Albert Einstein: Human and Superhuman]*, *Einstein Tam Phraputtachao To*p *(Einstein Questioned, Buddha Answered)* and *Einstein Phop, Phraputtachao Hen [Einstein Found, Buddha Had Seen]*.[394] The quotation reads as follows:

> *The religion of the future will be a cosmic religion. The religion which is based on experience, which refuses dogmatism. If there is any religion that would cope with the scientific needs it will be Buddhism.*[395]

These two quotes above are not identical but they share the main point. Both quotations make claims that Einstein expressed the view that Buddhism was an 'answer' for a 'scientific need'. Comparing the genuine quotations with the alleged quotations shows that the genuine quotations were rephrased and distorted to become the new quotations, however, they are misattributed to Einstein. It is noticeable that the alleged quotations have been indigenized to serve the purposes of praising Buddhism as they are applying strong words to make a pointed statement, 'If there is any religion that would cope with the scientific needs it will be Buddhism.'[396] In addition, only two key terms from the original quotations remain in the alleged quotations which are 'cosmic religion feeling' and 'motive for scientific research'.

There are two books cited as sources of the alleged quotations: *Albert Einstein, The human side: new glimpses from his archives* and *Albert Einstein, Ideas and*

---

[394] J.Tongrungroj. p. 2. ; S. Green. p. 79. 3. S. Sujira. 2007. p. 97 and p. 126.

[395] S. Sujira, 2007 p. 97 and p. 126

[396] S. Sujira, 2007 p. 97 and p. 126

Opinions.[397] In examining these two books, I found that although there were several of Einstein's quotations discussing his views of religion, the alleged quotation in question was not one of them. However, these books contain several quotes in which Einstein mentions Buddha and Buddhism as stated earlier. Therefore, it is clear that the quotations are distorted and misattributed to Einstein, although it is difficult to pinpoint the origin of the distorted quotations as they were wide spread in the popular account of the Science-Buddhism dialogue.

The distribution of the alleged quotation attributed to Einstein is not a practice restricted to Thailand but occurs elsewhere; as Donald Lopez suggests, if Buddhism and science had a Bible, it would open with the Einstein quotation that Buddhism is compatible with modern scientific needs.[398] He notes that the statement is widely quoted in international popular science publications generally without any source being provided. In the rare cases where a citation is included, it is usually to *Albert Einstein, The Human Side: New Glimpses from His Archives* by Helen Dukas and Banesh Hoffmann although no page reference is provided. This is generally the case both in international and Thai publications.[399]

5.1.2 Einstein's theories

The major scientific discoveries in the early twentieth century termed 'the new physics', contributed to by Einstein, have been briefly discussed in the Science-Buddhism dialogue in the books published in the 1960s as discussed in section 3.1.2 of

[397] Helen Dukas and Banesh Hoffmann, *Albert Einstein, The Human Side: new glimpses from his archives*, Princeton University press, 1986. Carl Seelig, and Sonja Bargmann, *Albert Einstein: Ideas and Opinions: based on Mein Weltbild*. New York: Crown Publishers. 1954.
[398] Donald S. Lopez, *Buddhism and Science: A Guide for the Perplexed,* University of Chicago Press. 2009.
[399] Dukas and Hoffmann, 1986.

Chapter 3. In the last century of the twentieth century, Einstein's theories have become central in the Science-Buddhism dialogue, particularly in the book account. Many authors of these books invoke the quantum physics and Einstein's Theory of Relativity as the vital proof of the compatibility between science and Buddhism, I examine the claims as follow

The claims regarding the Theory of Relativity

Claiming the compatibility between Einstein's theory of relativity and some of Buddhist teachings is one of the key themes in the popular account of Science-Buddhism dialogue in Thai landscape – particularly in the popular books published in the 2000s. More importantly, it is the focal point in the infamous book, *Einstein Phop Phraputtachao Hen*. It seems that one of major reason that makes the book so popular, both in the public and media, is its attempts to elaborate on the compatibility between Buddhist teachings and Einstein's theory of relativity with strong statements while the other books on the same genre do not. It is important to shed some light on the theme by focusing on why *Einstein Phop Phraputtachao Hen* had such a phenomenal popularity and sales.

The theory of relativity and idappaccayata (the principle of conditionality)

Einstein Phop Phraputtachao Hen demonstrates two aspects of the compatibility between the Theory of Relativity and Buddhist's teachings. First, Sujira makes a statement claiming the Buddhist notions of idappaccayata are compatible with the theory of relativity. As Sujira maintains, 'the Buddha said that Atta (self) does not exist, because everything on earth is relative or idappaccayata. Einstein confirmed the Buddha's saying by stating that the more we learn about nature's secrets the more we

need to be modest as everything is relative.'[400] These statements were presented in Sujira's book as direct quotes; therefore, it is clear that they are not Sujira's own interpretation. It is not my intention to criticise the arguments proposed in the Science-Buddhism dialogue, as my thesis aims to reflect the existence of the indigenization of Einstein in the Science-Buddhism dialogue and the significant role of the Science-Buddhism dialogue in the science communication landscape. However, I will pinpoint some flaws in Sujira's statements which I believe weaken Sujira's argument to some extent.

Although Sujira's statement 'the Buddha expressed that there is no self (atta)' is accurate, it is the second part of Sujira's claim, that 'because everything on earth is relative or idappaccayata' however, which could be challenged. First, it is not true that 'everything on earth is relative'. Second, idappaccayata is the principle of conditionality, not relativity as Sujira asserts. P.A. Payutto explains that 'dependent origination states that all things exist as interdependent factors, arising in an interrelated manner…'[401] Payutto uses the term 'padjai' or conditionality to explain the notion of idappaccayata while Sujira uses the term 'sampat' or relative in his argument. Sujira's misunderstanding of the Idappaccayata reflects the ordinary Thai's vague concepts of Buddhism teaching. Idappaccayata is one of the features in paticcasamuppada (Dependent of Origination), the core teaching in Buddhism. However, it seems that the paticcasamuppada (Dependent of Origination) and other core Buddhist teachings e.g. the Four Noble Truths and the Three Characteristics of Being, have not had significant

---

[400] S. Sujira, p.162

[401] P.A. Payutto and G. A Olson, *Buddhadhamma,* New York, State University of New York Press, 1995, p.85.

influence on Thai's religious life.[402] Moreover, it is the tendency that 'only a small number of Thai are familiar with the content of the Pali canon'.[403] Payutto has written an entire book devoted to the paticcasamuppada.[404] In this regard, Sujira fails to emphasise the foundation of Buddhist teaching in his argument, as a consequence, his statement is implausible to some readers of the newspapers and on the Internet.

Time is relative as state in a Buddhist scripture

Sujira claims that before Einstein, the Buddhist scripture already proposed the concept of the theory of relativity in the explanation of time differences in each 'phum (realm or world)'. 'Phum' or 'realm' represent the levels from heaven to hell where beings are assigned to live according to their store of karma; phum can be classified to thirty-one levels.[405] Although Sujira does not cite the source of the Buddhist scripture; the most likely source is *Traiphum* as it is the orthodox scripture elaborating on phum. In his argument, Sujira elaborates that 'if the human who live in human realm observes the time in different realms for example the time in the Brahma realm is one thousand time slower than the time in the human real, on the other hand, the time in hell is substantial slower than the human realm's time; this is the theory of relativity.'[406] These arguments show that Sujira interprets the term 'relative' in the simplistic way that all things are relative. Another author, Green also makes a similar error, in her own words she states 'everything is moving relatively'.[407] Although the statement is not faulty,

[402] M. Seeger, 'Phra Payutto and Debates 'On The Very Idea Of The Pali Canon in Thai Buddhism', Buddhist Studies Review, Vol. 26, 2009.
[403] S. Phromtha, 2007. Cited in M. Seeger, 2009. p.4
[404] P.A. Payutto and B. Evans, *Dependent Origination,* Bangkok, Buddhadhamma Foundation. 1994.
[405] The detail of phum was written in *Traiphum* (Three Worlds), the orthodox Buddhist scripture; it is believed to have been written by King Lu Thai in the thirteenth century.
[406] S. Sujira, p.57
[407] S. Green, p.16

however, it is misleading. In fact, there is the principle of covariance that needs to be taken into consideration as well.

The misleading of the term 'relativity theory' tends to be universal as it also occurs elsewhere. Missner pinpoints that Einstein was not happy with the term 'relativity' as, he felt it was misrepresentative, although he originally decided to use the term. Einstein would have rather preferred the term 'the principle of covariance' for his theory; however, the term has already been immutable and well disseminated since first introduced by the New York Times.[408] A Thai scientist, Tanaboonsombat, also criticised Sujira's book on this aspect in various places i.e. newspaper articles and his own blog.[409] Tanaboonsombat's criticism of the book is straightforward; he comments that 'the author of *Einstein Phop Phraputtachao Hen* may lack the firm understanding of physics; in addition, the author tends to be selective and choose only a fraction of the theory of relativity to support his claims.'[410]

Another example of the questionable nature of Sujira's argument regarding the theory of relativity is the statement that 'the only way to prove the theory of relativity by yourself is by mind training…when your mind is refined enough you will reach the miracle of Einstein's theory of relativity'.[411] From my point of view, the claim is distorted given it is widely known that the theory of relativity was proved by the joint meeting of the Royal Society and Royal Astronomical Society in London on 20th May 1919; the event that made Einstein world-famous. Moreover, in everyday life, we use the GPS (Global

[408] Missner p.271
[409] Buncha Tanaboonsombat, 'The Distortion of Science: The Case of *Einstein Phop Phraputtachao Hen*', 2008, <https://www.gotoknow.org/posts/192799> accessed 15 April 2015.
[410] B. Tanaboonsombat, 2008.
[411] S.Sujira, 2007, p. 174

Positioning System), built based on the theory of relativity so it is not true that there is only one way to prove the theory of relativity as Sujira claims. This is an example of Sujira mistakenly presenting some basic foundation of science in his book; it demonstrates the author's lack of general knowledge towards the famous theory. Moreover, to a certain measure it supports my argument that the popular account of Einstein focuses on indigenizing him, yet at times without reference or supporting evidence from his work.

Anatta (no self), the ultimate truth and the particle physics

The advances of science in particle physics have provoked two connected arguments regarding Buddhism's superiority to science, emphasising that the more advancement science achieves, the closer it is likely to reveal and justify the Buddhist concept of anatta (no-self). The claim on the compatibility between the advance of quantum physics and anatta was proposed in a few books on the Science-Buddhism dialogue. A concrete example is Sujira's argument in the famed book, he argues 'more and more particles being discovered; by searching continually we will only find the emptiness; the quantum theory and the theory of relativity share the core principle with anatta.'[412] Similarly, another book by Namchai Chewawiwat, argues 'it seems unlikely that scientists will be able to truly understand the big matter like the universe or the very small particles; these subjects are anatta or they do not exist. It shows the harmony between science and Buddhism.'[413] Anatta is a core teaching in Buddhism, the meaning is 'not self'; it is one of the notions in Triluk or the principle of the three characteristics

[412] S. Sujira, pp.82-83.

[413] Namchai Chiwawiwat. *Kam-bang-kot Plaek Ching Witthayasat [Scientific Rules are in the shadow of Karma]*. Krungthep, Sarakhadi. 2010.

of existence.[414]The existence of anatta is illustrated by the Principle of the Five Aggregates.[415] The principle views that there is no real self in all things since they are composed of elements. Therefore, when we say that something exists, we must understand that it exists in terms of the combination of various elements.[416]

Another theme, argued by some authors in the Science-Buddhism dialogue, derives from the discoveries of the new physics and quantum physics, which overturned the older Newtonian ideas these have also been used by some authors to argue Buddhism's superiority to science. According to the argument, the new scientific findings show that science could never obtain the ultimate truth whereas these authors claim that the Buddha had reached the ultimate truth through his enlightenment.[417] The argument asserts that science focuses on the physical world hence it will never reach the ultimate truth, while Buddhism focuses on the mind; the mind is the centre and foundation of everything.[418] The argument was initially established by P.A. Payutto who argues that 'ultimate truth spoken of by religion is beyond the reach of science at any stage in time.'[419] P.A. Payutto further adds that 'If science wants to know the ultimate truth, it must know the mind.'[420]

A few authors, both academic and non-academic, echo the argument on the ultimate truth that Buddhism had reached. It is likely that they followed P.A. Payutto's

---

[414] The three characteristics of existence are Anicca (impermanence), Dukkha (suffereng0, and Anatta (not self).
[415] The Principle of the Five Aggregates is a principle explaining that all things are integrated; there are elements composing a being. The elements are ruppa (corporeality), feeling (vedena), perception (sanna), mental formations (sankhara) and consciousness (vinnana).
[416] P.A. Payutto and Olsen 1995, p.53
[417] C. Penwijit, Phuttasat Kap Wittayasat [Buddhism and Science]. Bangkok, Dokya, 1996, p.322
[418] Ibid.
[419] P.A.Payutto.1992, p.30
[420] Ibid., p.67

argument. For instance, Pawilai comments, in his book, that 'science tries to reveal the truth regarding the universe; however, it is likely to always discover new findings. Hence, science will never achieve the ultimate truth'.[421] Another author, Penwijit asserts that 'Einstein's attempt to construct the unified field theory and his failure regarding the attempt, demonstrate that scientific knowledge is unlikely to discover the ultimate reality.'[422]

5.1.3 The claim that Einstein understood/ practised Buddhism

One of the key themes in the indigenization of Einstein claims that Einstein understood and/or practised Buddhism and some authors have further their arguments that if Einstein had practiced Buddhist doctrine, he could have discovered even greater theories. *Einstein Phop Phraphuttachao Hen* is easily the Science-Buddhism dialogue book with the highest sale among books on same genre which strongly proposes these arguments. The claims of indigenization from *Einstein Phop Phraphuttachao Hen* and other books share one common aspect, the lack of references. A claim made by Sujira states, 'Einstein studied Buddhism and [was] deeply impressed with it.'[423] Sujira further reinforced his argument contending, 'it was unfortunate that Einstein did not study Buddhism which could have steered him to great new theories.'[424] These two statements are not only unsupported by any document but they are also mutually contradictory. One may question whether Einstein had studied Buddhism or not. These unreferenced claims were further compounded with 'Einstein had studied Buddhism,

---

[421] Rawee Pawilai. *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (The comparison of Science and Buddhism).* Bangkok, Buddhadhamma Foundation, 2000, pp.163-164

[422] C. Penwijit. 1996.

[423] S. Sujira, p. 23 and p. 50

[424] Ibid., p. 46

especially the Kalama Sutta, and he was surprised that there is a religion that stated not to simply believe what one hears.'[425] These are examples of floating and uncited claims put forward by Sujira in his publication and the lack of references makes them disreputable. Another example of an attempt to indigenize Einstein is in, *Einstein Tam Phraputtachao Top (Einstein questioned, Buddha answered)*.[426] Green, the author, presents the alleged quotation of Einstein regarding Buddhism, mentioned earlier. Moreover, she argues that Einstein could have succeeded in finding the unified theory if he had practiced Buddhism; Green states 'it is a shame that Albert Einstein didn't have a chance to meet by chance any vipassana teacher during his time otherwise he would have made the much better world/ discoveries.'[427]

Another attempt the books make to indigenize Einstein in claiming that Einstein had applied Buddhist's concepts to his work, comes, for example, through Penwijit who devotes a chapter in his book to claim the similarity between the Buddha and Einstein.[428] He claims that the Buddha and Einstein share a few qualities, first they both were very kind. Second aspect highlighted by the author is 'conjecture', an English term which the author prefers to use rather than Thai. Penwijit defines 'conjecture' as prediction which is related to intuition. He claims that conjecture played a strong role in the Buddha's enlightenment as well as Einstein's finding of the Special Theory of Relativity.[429]

Similarly, Sujira's famed book, *Einstein Phop Phraphuttachao Hen*, discussed this theme. However, Sujira uses different terminologies from Penwijit he uses a few

[425] Ibid., p. 97
[426] S. Green. 2006,
[427] S. Green, p.89
[428] C. Penwijit. pp.73-112
[429] C. Penwichit. pp. 91-94

terminologies interchangeably, i.e. 'phanyayarn', 'yanna tassana', 'yanna samadhi' and 'yangru'.[430] Sujira uses these terms often and interchangeably to explain his main point which tended to be 'samadhi (concentration)'. [431] Yet again, as mentioned earlier, these terms are Thai terms of some Buddhist concepts, however, Thai often gives vague perspectives of the teachings in the Pali canon given that the reading of the Pali canon is not a common practice.[432]

Moreover, he does not provide the definitions for these terms. Therefore, it is not easy to comprehend his claim. Instead he repeats himself a few times, on his belief that Einstein had foreseen his theories because of phanyayarn which is the state that can be attained through samdhi.[433] He then explains that by focusing the mind in a single sensation, one will reach 'yanna tassana or 'yang ru (foresee)'.[434] Sujira claims that 'Einstein had very high level of Samadhi without practicing vipassana; it could be by chance or his bun (Pali – punna means merit) which made him succeed in discovering his theories.'[435] He further claims that 'if Einstein had studied the Buddha's teaching before he had found the Theory of Relativity when he was twenty-six years of age; he would have discovered even greater theories than the Theory of Relativity.'[436] Sujira has made a few claims which contradict each other, particularly regarding whether Einstein had studied Buddhism or not.

---

[430] S. Sujira, pp. 117-131
[431] Samadhi means 'concentration' or the mental state of being firmly fixed. Information from the Palikanon.com, 'Samadhi' (2015) <http://www.palikanon.com/english/wtb/s_t/samaadhi.htm> accessed 16 April 2015.
[432] See M.Seeger, 2009 and P.A.Payutto, 1995.
[433] S. Sujira, p. 121
[434] Ibid., p.119
[435] Ibid.
[436] S. Sujira, p.126

It is intriguing that although the popular books on the Science-Buddhism dialogue published after the 1990s share similar key themes, only *Einstein Phop Phraphuttachao Hen* made such relatively phenomenal sales and was listed on the best-seller list. Hence, it is worth devoting some space to investigate the book's strategies. First, I found that the title is attractive; it contains two great persons, the Buddha and Einstein who seem to be in dialogue. The title of *Einstein Pop, Phraputtachao Hen* clearly demonstrates the aspects that the Buddha is superior to Einstein. The Thai word 'phop' means 'found' and 'hen' generally means 'see', his choice in using these words could be interpreted as a desire to express the sense that Einstein's discoveries were simply seen by the Buddha. Thevwankarn, the books' editor said that 'hen' (see) is a word with deeper meaning than 'phop'; 'hen' has a hidden meaning which is 'to perceive'. According to Thewankarn, the book editor, one can found/ discover something without perceiving it, similarly Einstein discovered some truths which could lead to enlightenment, however, he had not reached the state of 'phop' to 'hen' as had the Buddha.[437]

I found that there are two approaches that Sujira took which to a certain extent could have played a strong role in making his book a best seller. First, Sujira uses repetition strategy on certain content throughout his book, particularly the alleged quotation and the praise of Buddhism. For example, Sujira tries to confirm that the Buddha had foreseen scientific discoveries 2,500 years earlier.[438] It could be understood that the repetitions were undertaken to reassure and comfort the readers, and to support the claim that Buddhism is superior to science. Secondly, Sujira also made some

[437] S. Sujira, prologue n.p.
[438] S. Sujira, pp. 34, 37, 40, 41, 45,

statements using conditional clauses i.e. 'if Einstein had studied Paticcasamuppada (the law of causation), then he could have been more successful.'[439] Perhaps, this kind of statement does not need a reference and it tends to reassure readers who seek confirmation of Buddhism's superiority, which perhaps is what the middle-class Thai is looking for in the Science-Buddhism dialogue.

It is important to note that the attempts to indigenize Einstein aim to use Einstein as proof to compliment Buddhism, and show that Einstein, a scientific icon admires Buddhism. The authors who indigenize Einstein often demonstrate the superiority of Buddhism over science or the superiority of the Buddha over Einstein. These practices of indigenization always seem to lead to the conclusion that the Buddha had found and answered scientific questions more than two thousand years earlier.

The degree of the indigenization of Einstein became stronger over time, starting from P.A. Payutto's seminal lecture and book on the Science-Buddhism dialogue in 1992, through the books already discussed. My examination continues through concentration of Einstein's indigenization in newspapers.

5.2 The indigenization of Einstein in newspapers

I begin by comparing depictions of Einstein with three other scientists I discussed in brief in Chapters 3 and 4. Following this, I examine the theme of Science-Buddhism dialogue and indigenization of Einstein in Thai newspapers, along with a comparison to the depictions of Einstein in some British newspapers to demonstrate comparative views. As shown in chapter 3, section 3.2, the newspapers covered a small quantity of

[439] S. Sujira, p.162

articles on the science-Buddhism dialogue. Following this I return to some of the articles already discussed in Chapter 3, concentrating specifically on their discussion of the indigenization of Einstein.

5.2.1 The depiction of Einstein in comparison with the depictions of Newton, Darwin and Hawking

In general, the depiction of Einstein in Thai newspapers is positive and written in laudatory and admiring tones. The use of the terms yod (top-notched) and mahadsachan (miraculous) are often found when referring to Einstein, both in titles and in the text as the following sample articles demonstrate: 'Two dimensions of Einstein: top notched thinker vs musician' and a similar piece, 'The wonderful idea of the miraculous man: Einstein.' Smart and intelligent are words often associated with Einstein and yet his biography represents a life of difficulty and hardship particularly in the first years of his academic life.[440]

His biographies are often selective; his marriage and family life are mentioned infrequently except once in Tanabunsombat's article, 'Einstein Song Miti Yod Nak Khid vs Yod Nak Dontri' [Einstein's two sides: the great thinker vs the great musician].[441] Tanabunsombat's article mentions Einstein's second wife Elsa and this is probably the only article mentioning Einstein's family life in newspaper accounts. The description of Einstein suggests that he devoted himself entirely to his work, without any distraction. His imperfect personal life –his failed first marriage, his abandonment of his illegitimate

[440] Einstein is well known for his exceptional talents at mathematics and physics but in 1895, he sat and failed the entrance examination at the Eidgenössische Technische Hochschule in Zurich which would have allowed him to study for a diploma as an electrical engineer. Information from http://www-history.mcs.st-and.ac.uk/Biographies/Einstein.html, accessed on 29 April 2013.

[441] B. Tanaboonsombat. 2011, p.10

first child, his academic struggles during his school and college days—have mostly been excluded. Thus, in order to fit into the ideology of a good man according to Buddhist thought and doctrine, Thai newspapers edited Einstein's biography to omit his marriages and parenthood and to depict him only as a hard-working genius.

A comparison analysis with some other world-famous scientists should reveal the distinctiveness of Einstein's indigenization. Therefore, I have examined newspapers depictions of Isaac Newton, Charles Darwin and Stephen Hawking as they are three international scientists covered by popular books and newspapers, although on a substantially less scale than Einstein has. Isaac Newton is described as 'the most outstanding scientist', 'the father of physics and modern astronomy' and 'the English gentleman-philosopher'.[442] Another example is *Matichon*'s article entitled 'Newton yod phudi [Newton: the top-notch English gentleman]', reported that Newton was voted by BBC website users as the greatest English man with the American Free Press (AFP) being cited as the source.[443] Despite the fact that there is no attempt to indigenize Newton, he is described as 'chao kid chao kan' [unforgiving] in an article in *Krungthepthurakit*. In comparison to Einstein, Newton is described as more of a human being, although very limited details of his personality are provided in comparison to Einstein. In contrast, Einstein is depicted as being close to perfect, although this is achieved through the omission of his early school years and speech problems which he eventually overcame.

Charles Darwin is one of the few foreign scientists to have been featured in Thai newspapers. I found that the stories about Darwin featured in Thai newspapers are

---

[442] Ibid.

[443] Anon. '*Newton yod phudi'* [Newton: the top notch English gentleman], *Matichon*, 16 August 2003, p.5.

mostly focused on Darwin-related activities rather than Darwin himself, particularly the celebration related to the bicentenary of Darwin's birth. As we can see from *Krungthepturakij*'s two pieces covering a public lecture, 'Charles Darwin: An Inspiration for the 21st Century', hosted by the British Council in Thailand, which was part of the international 'Darwin Now' exhibition supported, in part, by the Thai National Science and Technology Agency (NSTDA). One news report on the lecture entitled 'Sit Charles Darwin Yuean Thai Laekplian Thitsadi Wiwattanakan' [Charles Darwin's pupil visits Thailand], offered readers a summary of the public lecture on Darwin. The exhibition was part of an international project on Darwin.[444] The second piece, entitled 'Thitsadi Kamnoet Chewit: Moradok Song Thor Nakwit Runmai' [The origin of Life theory: heritage passes on to new aged scientists] mentions Darwin's characteristic, although briefly. He is represented as curious and this is pinpointed as one of the great characteristics of a successful scientist.[445]

The examination shows that there was no attempt to connect Darwin with Thai Buddhism, in notable contrast to similar articles on Einstein. One possible explanation could be that Darwin is not well known in Thai society and there are several pieces of evidence to support the finding that Darwin is far less well known than Einstein in Thailand. For example, there were rarely any photographs of Darwin in the popular account while photographs of Einstein are widely used e.g. his photograph was used as a logo of a leading tutoring school, The Brain. In addition, Einstein's renowned equation was used as a restaurant's name. Einstein appears on postcards and bookmarks. One

[444] Anon. 'Sit Charles Darwin Yuean Thai Laekplian Thitsadi Wiwattanakan' [Charles Darwin's pupil visits Thailand]', *Krungthepturakij*, 17 September 2009, p. 9.
[445] Salinee Tuppila, 'Thitsadi Kamnoet Chewit: Moradok Song Thor Nakwit Runmai' [The origin of Life theory: heritage passes on to new aged scientists], *Krungthepturakij*, 15 October 2009, p. 9.

reason for the scarcity of images of Darwin may be that Darwin lived in the earlier period when photography was not as widespread as it was when Einstein was alive.

Furthermore, Darwin's biography was published in modest numbers in Thailand; there was no entire book devoted to Darwin's biography while in comparison Einstein who has the highest number of popular books published on his biography. Darwin's world-renowned book, 'On the Original of Species' was translated into Thai and published for the first time in 2015.

Although, the scientist Hawking was regularly featured in Thai newspapers, it is still less so than Einstein. He is referred to in a few articles in *Thairath* briefly as being 'the most intelligent scientist alive,' 'a world-genius scientist,' a 'physical cosmologist,' and a 'philosopher.'[446] Hawking's coverage is similar to those of Darwin's which focuses on their work rather than their personality. In Hawking's case, his views on aliens and his book *A Brief History of Time* are often the focal point in his coverage.

Thus far, I have discussed Einstein's positive depictions and compared them to the depictions of other well-known foreign scientists' i.e. Newton, Darwin and Hawking to demonstrate Einstein's distinctive profile. As my comparative examination demonstrates, these scientists' characteristics were covered briefly and none of these scientists was indigenised as is the case with Einstein.

To highlight the unique depiction of Einstein in Thai newspapers, I compare Thai newspapers' coverage with two prominent British newspapers, the *Guardian* and *The Times*. I select these two newspapers because they are often used as sources for my

[446] *Thairath* 21st August 2011 p. 14; *Thairath* 28th April 2010 p. 7; *Thairath* 10th Jan 2012 p. 2; *Thairath* 12th August 2010 p. 7; *Thairath* 28th April 2010 p. 7.

selected Thai newspapers, *Matichon*, *Krungthepthurakit*, and *Thairath*. Moreover, both the English and the Thai newspapers share similarities in their coverage of Einstein with a particular focus on his theories, his life as a young child, and his career. Whereas these British newspapers try to balance his work and his family life in almost every article, the Thai newspapers focus almost exclusively on his work. For example, a piece in *The Times* entitled 'Einstein the genius: well, everything is relative...' begins with a description of Einstein's published papers followed by an account of his personal life.[447] The article is highly critical of Einstein's personal life stating, 'Einstein was no better at fatherhood than he was at marriage [...] his relationship with his sons was fraught, partly because of what they saw as his harsh treatment of their mother.'[448]

Another piece titled 'Letters reveal relative truth of Einstein's family life' states that Einstein has been 'portrayed as a bad father, cruel to his wives and an adulterer.'[449] These examples demonstrate that British newspapers usually depict Einstein as a complex and yet regular human being, with both good and bad sides. On the contrary, Thai newspapers have a tendency to present Einstein as an extraordinary human by concentrating on him being genius. They overlook some dark spots in his personal life and selectively represent his character describing him as 'cheerful', 'generous', 'kind' and with 'a good sense of humour', while his dark side, described in the British newspapers, is ignored.[450] The main finding here is that Thai newspapers presentation

---

[447] Anjana Ahuja, 'Einstein the genius: well, everything's relative...' *The Times*, 20 January 2005, http://www.thetimes.co.uk/tto/life/article1719888.ece, accessed 17 April 2015.
[448] Ibid.
[449] Alok Jha, 'Letters reveal relative truth of Einstein's family life' *The Guardian*, 11 July 2006, http://www.theguardian.com/science/2006/jul/11/internationalnews, accessed 17 April 2015.
[450] Wisang, 'Chiwit phissawong khong Einstein [Einstein's Amazing Life]', *Matichon*, 30 September 2005, p. 22.

of Einstein is repeatedly selective in order to remain respectable and show him in the best status.

5.2.2 The characteristics of the indigenization of Einstein.

This section shows the characteristics of the indigenization of Einstein depicted by the newspapers.

Einstein understood Buddhist's teachings

An outstanding example of the indigenization of Einstein is found in an article in *Matichon* on 21 January 2008.[451] Dumrong Leelanurak claims that Einstein understood Buddhist teaching. He claims, 'it is unbelievable that Einstein deeply understood Chanda (proper resolve) in the same way as Buddhists' understanding, although he was Jewish….'[452] He goes on to state that 'Einstein understood Chanda and Tanha (craving) although he was not a Buddhist and did not study the law of causation as if a Buddhist.'[453] Chanda was defined by P.A. Payutto as 'proper resolve', an inspiration in doing task; it is one of the features in the Proper Effort.[454] Tanha or craving is explained as improper thought.[455] The article's content reflects the columnist's perspective toward education reformation; it seems that Einstein was referred to in order to grab readers' attention, particularly in the title of the article. As the title states, 'Einstein said…'; it could be interpreted as the columnist uses Einstein as a verification of the following statement. This example clearly demonstrates the high profile of Einstein given he was

---

[451]Dumrong Leelanurak. '*Einstein wa: Rongrian Tong Fumfuk Chanta Khong Nakrian* [Einstein said that school should nurture 'chanta' among students], *Matichon*, 21 January 2008, p. 7

[452] Ibid.

[453] Ibid.

[454] P.A.Payutto and Olsen. p.251. P.A.Payutto adds that the Proper Effort is a concentration of mental effort which is one of the seven factors leading to enlightenment.

[455] Ibid.

referred to outside the field of science or even the Science-Buddhism dialogue. This practice fits in with the circumstance that 'Einstein was often quote out of context as supportive whatever position a particular advocate may hold.'[456] Thus, the columnist acknowledges that Einstein was not a Buddhist, yet refers to him as someone who comprehended one of the core Buddhist teachings, hence marking him out as something special in Thai society and as more than just a foreign scientist.

Einstein and 'Ta Tip'

Another example of indigenizing Einstein is to explain his working practice through the application of Buddhist concepts. Since his work achievements are greatly recognised and he is acclaimed as the greatest scientist and the person of the century, by claiming that he had practised it via the Buddhist way verifies the Buddhist practice at the same time. An outstanding example of the practice is the article, 'Naewkit Assachan Khong Burut Mahadsachan Einstein' [Amazing view of the miraculous man: Einstein]. The author praises Einstein's achievement and argues, that although Einstein was neither a mathematician nor an experimentalist he worked by thinking, his working process suggested Einstein has the distinctive qualification of 'Ta tip (divine eyes)'.[457] The author defines Ta tip briefly as 'the ability to see things thoroughly', he claims Ta tip had made Einstein one of the greatest scientists.

The definitions of 'Ta tip' can be explained in two ways. First, in general, to Thai Buddhists 'Ta tip' means eyes that can see the past and the future, and see what others

[456] J.O. Baker, 2012, 'Public Perceptions of Incompatibility between 'Science and Religion'' 21 Public Understanding of Science, p. 340.

[457] B.Tanabumsombat. 'Naewkit Assachan Khong Burut Mahadsachan Einstein [Amazing view of the miraculous man: Einstein]', *Krungthepthurakit*, 31 March 2005, p.5.

cannot.[458] The second meanings are according to canonical Buddhist teachings; Ta Tip is considered a miracle (pratiharya) in Buddhist scripture.[459] The Pali canon, *Tipitaka*, states that 'Ta tip' is one of six features of Abhinna 6 (super/ higher knowledge). Gethin says, Ta tip is one of the six higher knowledge; it is the knowledge that one who obtains can see the death and rebirth of beings. He adds that Ta tip is the ability to understand how beings are inferior or superior, fair or ugly, fortunate or unfortunate according to their actions.[460] It is difficult to interpret whether the columnist defines 'Ta Tip' by its general meaning or by the *Tipitaka*. Either way, this article suggests that Einstein obtained extraordinary Buddhist features, and is another example of the attempt to indigenize Einstein. The example is remarkable as Einstein could be the only scientist (either Thai or foreign) who is granted this great Buddhist compliment. It should be noted, that although Buddhism concepts often occupy Thai perception as shown in Thai usage of Buddhist terms in their everyday language, the Buddhist term's usages in everyday life do not always reflect the Buddhist's concept, I will emphasise this statement further.

It is also important to note that although Einstein was portrayed with great esteem, even compared to some abilities that the Buddha had achieved, however, the comparison was not intended to show that Einstein is greater than the Buddha. Instead,

---

[458] Anon. *Matichon Dictionary of the Thai Language*, Bangkok: The Matichon Books. 2005, p.887

[459] It is important to note that Western and Buddhist understanding of miracle are different, the former sees the meaning as 'an unusual event that is the result of direct divine circumvention or modification of the natural order'. The latter's meaning regards miracle as the extraordinary power of the mind of the accomplished holy; it is achieved by mental training. Rupert Gethin. 'Tales of Miraculous Teachings: Miracles in Early Indian Buddhism.', *The Cambridge Companion to Miracles*, Cambridge University Press. 2011, p.217

[460] Ibid., p.218

they used Einstein to endorse how great Buddhism is and concluded that what Einstein had discovered in the modern day, was found by the Buddha more than 2,500 years earlier. Therefore, for them the Buddha is superior to Einstein as well as Buddhism is greater than science.

Einstein and the alleged quotation

As shown earlier, the alleged quotation of Einstein praising Buddhism is one of the key themes in the popular book account of the Science-Buddhism dialogue. However, it is not the case in newspapers. Although a few of Einstein's quotations were often mentioned in the newspaper articles, particularly the quotation [Chintanakan Samkan Kwa Kwamru [Imagine is more than important than knowledge]'.

An article in *Matichon* 23 December 2007, is the only article which mentions the alleged quotation.[461] The article begins with a compliment on Einstein and his discoveries. This article is clearly using similar style to that of the popular books discussed in demonstrating the superiority of Buddhism over science. Hence, the article concludes that 'Einstein had discovered the theory of relativity $E=mc^2$ that seems to be beneficial to the human, however, it turned out that his discovery had destroyed the human. On the opposite, it is needless to say what the Buddha had done for human.'[462] From my point of view, this article delivers the aspect quite well within the restricted space of newspaper, although it lacks references.

Moreover, another article in *Krungthepthurakit* 11 June 2005 though it does not provide the alleged quotation, it does reflect the columnist's perspective regarding the

[461] Saroj Maneerat, 'Kid Yang Tawantok-Phatiphat Yang Tawan Ok [Think like the West- Act like the East]' *Matichon*, 23 December 2007. p.20.
[462] Ibid, p.20

alleged quotation. The article criticises the reliability of the quote, as it was attributed to Einstein without reference to their sources.[463] It states that 'some quotations were put into Einstein's mouth and because he is a genius; one of the greatest scientists. I believe that people who claimed that Einstein had said it, believe that by using Einstein to justify and validate Buddhism, no one will dare to argue against what Einstein had said.'[464] From my point of view, this comment is a straightforward view that sums up the indigenization of Einstein very well.

Einstein Phop Phraphuttachao Hen

Another significant theme covered in newspapers is the discussion of the book, *Einstein Phop Phraphuttachao Hen*. The majority of these articles appeared in *Krungthepthurakit*. One explanation is that one of the leading critics of the book was Tanabunsombat who is also a columnist at *Krungthepthurakit* and a fulltime research scientist at the NSTDA.

There were five articles on the book in *Krungthepthurakit*; it covers the issue the most among these three newspapers I am examining. Since the main critic of the book was *Krungthepthurakit*'s own columnist, Tanabunsombat it is noticeable that *Krungthepthurakit* showed an attempt to balance the discussion by giving space to both sides of the debate. Of the five articles they published about the book, two articles criticized the book, two articles offered positive reviews, and one article gave a neutral view. Considering the quantity of the articles it seems that *Krungthepthurakit* successfully gives balanced views; however, articles which present negative view against

[463] B. Tanabunsombat. 'Chintanakan vs Kwamru: Arai Samkan Kwa kan? [Creativity vs Knowledge: what is more important?]'. *Krungthepthurakit*, 11 June 2005, p. 10
[464] Ibid.

the book were given more space than the rest of the articles. The two articles criticizing the book were given approximately three quarters of a broadsheet-sized page each, while of the positive articles, one was given half a page and the other a sixth of a broadsheet size page. The two negative articles took the form of interviews with Tanabunsombat: 'Buncha Tanabunsombat Chuan Kid Rueang Einstein [Buncha Tanabunsombat's encourages thought about Einstein]' and 'Kwampidplad Khong Einstein Phop Phraphuttachao Hen Nai Lakhedpon of Buncha Tanabunsombat (PhD) [The errors of *Einstein Phop Phraphuttachao Hen*: a theoretical view from Buncha Tanabunsombat (PhD)]'.[465]

Tanabunsombat's view in the former article was not entirely negative; his tone was quite mild and the book's name was not explicitly mentioned in the article.[466] Tanabunsombat reached the following conclusion in his initial article on *Einstein Phop Phraphuttachao Hen* stating 'demonstrating the comparisons between science and religion need to be done with caution and care otherwise it will lead to errors and misunderstandings.'[467] Furthermore, Tanabunsombat recommends that *Phutthasatsana Nai Tana Pen Rak Tan Khong Wittayasat (Buddhism as the Foundation of Science)* by P.A. Payutto is a great example of a book on the Science-Buddhism dialogue in a manner that is logical, factually correct and neutral.[468] Tanabunsombat's second point urges caution when reviewing the oversimplifications found in popular science books since they may cause more damage than enlightenment, which is the case

[465] *Krungthepturakij*, 27 April 2008, p. 9; *Krungthepturakij*, 3 August 2008, pp.11-12.
[466] *Krungthepturakij*, 27 April 2008, p. 9.
[467] Ibid.
[468] P.A. Payutto, 1992.

of *Einstein Phop Phraphuttachao Hen*.[469] In contrast, another article by Chomduean Sattawut, a nuclear scientist admired *Einstein Phop Phraphuttachao Hen*, saying that it was 'very enjoyable to read' and that it 'answers some of my unresolved questions.'[470]

This section shows that newspapers played a relatively trivial role in indigenizing Einstein, demonstrating by the small quantity of the articles on the indigenization of Einstein. As mentioned in Chapter 4, there were fifty-six articles on Einstein in three newspapers between 1999-2011. Six articles were on the indigenization of Einstein, four out of seven articles of which focus on the specific book, *Einstein Phop Phraphuttachap Hen*. Despite, the small number of the articles on the indigenization of Einstein were conducted in a similar way to those of the popular books. These examples demonstrate various attempts to 'indigenize' Einstein in Thai newspapers, which employed practices of explaining his personality in terms of Buddhist concepts, and claims that he understood Buddhist teaching in order to make him more familiar to the local Thai population. Perhaps, newspapers have two roles in the Science-Buddhism dialogue, first to small extent, indigenizing Einstein; second, reports also offer space for the critique of the indigenization of Einstein. The latter role is similar to the Internet, particularly the Pantip online discussion forum, discussed in following section.

5.3 The indigenization of Einstein in Pantip online forum

This section investigates how Einstein was indigenized on Pantip online forum; how such indigenization parallels with the practices in books and newspapers.

---

[469] *Krungthepturakij*, 27 April 2008, p. 9.

[470] Chomduean Sattawut, '*Einstein Phop Phraphuttachao Hen*: Kwamching Te Chomduean Sattawut Hen', *Krungthepthurakit* 27 October 2008, p.3

As discussed in Chapter 4, the Pantip participants expressed their interest in Einstein in three main aspects: his work, the indigenization of him, and his personal characteristics, respectively. There were thirty-six threads on Einstein's work, twenty-nine threads discussing the indigenization of Einstein, and twelve threads on his characteristics. The difference is not great, more importantly, the threads on the indigenization of Einstein often contain more replied posts than the threads on Einstein's work which show how active and vivid the topics are. Therefore, it is evidence that the indigenization of Einstein is a topic of substantial interest to the users. My findings, as discussed in Chapter 3, confirm my statement that it shows the indigenization of Einstein and *Einstein Phop Phraphuttachao Hen* are two topics in the top five most discussed topics in the Pantip threads on Science-Buddhism dialogue.

The indigenization of Einstein in Pantip reveals two key themes. The first theme is the discussions inspired by the book, *Einstein Phop Phraputtachao Hen* with twenty-one threads. The second theme is on the alleged quotation of Einstein, stated earlier, which is contained in ten threads. It is possible that the quantity of threads regarding the topics could have been greater than the figure that my search yielded. However, Pantip archive only stores certain threads depending on their members' votes and requests to save particular threads in the archive. Therefore, the outcome of my search may not reflect the actual figure. Next, I explore the indigenization of Einstein, focusing on the discussions in Pantip, along with a few other websites as well.

5.3.1 The threads on Einstein Phop Phraputtachao Hen

As I have previously discussed the popularity of the book, *Einstein Phop Phraphuttachao Hen* was not only shown by the number of copies sold but also the

consequence that the book had stirred up debates on the compatibility of science and Buddhism on the Internet. Moreover, the heated debate on the Internet had set an agenda for newspapers to follow the debate as well which I have discussed is one of the many books focusing on indigenizing Einstein. However, the book is distinctive from the rest on the same theme in a few aspects because it not only strongly emphasises Einstein's indigenization, but it also points to the similarities between Einstein's theories and the content in the *Tipitaka*.

The threads in Pantip regarding the books on Science-Buddhism dialogue and Einstein's indigenization could be classified into two categories: the threads approving the books with ten threads, and the threads criticising the books with eleven threads. The numbers of threads on each category are similar. It is important to note that I classify these threads by their initial posts, however, these threads often derailed from the initial posts e.g. some members would post their opinion regarding the book without following the initial posts. More importantly, despite the initial posts either positive or negative to the book, the replied posts often involved both views, which will be discussed later on.

The approving views toward Einstein Phop Phraputtachao Hen

The first thread talking about the book was posted in Wahkor café of Pantip.com on September 2007, two months after the book was first published in July 2007. The thread was initiated by a member with log-in name, 9, who asked 'Has anyone read *Einstein Phop Phraputtachao Hen*; the book is very enjoyable (sanook) and the Buddha

had mentioned the Theory of Relativity around 2,500 years before Einstein'.[471] The replies in the thread contained both positive and negative views towards the book. The log-in member, '9', who initiated the thread added a few posts to firmly show his admiration for the book, e.g. he writes, 'Buddhism is far superior to science. *Tipitika* is complicated which make me realize of the depth of the Buddha's knowledge. On the other hand, it is not too difficult to make sense of Einstein's equation E=mc2 and Theory of Relativity but the Buddha's.'[472] Another member, LivingMachine, reflected the opposite view in reply to the admiration of the book post, he states 'Has Buddhism been distorted that far?' while another log-in, Chosen, replied to LivingMachine's post, stating, 'The book is very enjoyable. You should not trust science solely; religion has its own advantages'. Another member called 'chose' said that 'explaining Buddhism with science make Buddhism a lot easier to understand.' The thread is vivid with positive and negative posts toward the book. The log-in member, Patchadtang, who revealed in the thread that he is Som Sujira the author of the book, joined the discussion. He expressed that 'it is common that we have different opinions; the attempts to connect religion with science always were opposed, Einstein experienced that as well as Fritjof Copra who wrote *Tao of Physics'.*[473] It is important to note, that often replied posts seem to demonstrate views toward the Science-Buddhism dialogue rather than the book itself. For instance, a reply by 'Chan meekha khae nai' asserts 'the Science-Buddhism dialogue is trying to show the similarities between science and Buddhism because they share

---

[471] 9, 'Pantip: X5805090', 2007, <http://topicstock.pantip.com/wahkor/topicstock/2007/09/X5805090/X5805090.html> accessed 23 April 2015.

[472] 9, 2007.

[473] Ibid.

some facts and both wants to explain nature.'[474] Another post by 'my_toei' asserts, 'the Buddha had said a number of scientific statements but he did not highlight them since they do not help human to overcome dukkha (suffering).'[475] In addition, 'Angos' added 'I agree with the attempt to explain Buddhism with science.'[476] These replied posts are evidence that *Einstein Phop Phraphuttachao Hen* has become a representative of the Science-Buddhism dialogue to some extent.

Among these threads began with the approving views toward *Einstein Phop Phraputtachao Hen*, Som, the author of the book has initiated six threads talking about his own book and Science-Buddhism dialogue. Phadchatang, Som's log-in name, seems to be an active member who often joined the discussions focusing on the Science-Buddhism dialogue. For instance, one of Som's initiated threads, with the title that reads 'Let talk about the Buddha's miracles by look at them from scientific views' expresses, in the initiated post, that 'there are a number of threads on Pantip questioning the compatibility between Buddhism and science; I can reassure you that *Einstein Phop Phraphuttachao Hen* was written from my own experience; I did not write it by nungtien.'[477] The direct translation of the phrase into English is 'sitting and looking at the candle', however, to make more sense it can be translated to the closet phrase in English as 'to cook the content up'. Phadchatang urged other Pantip members to join the discussion in the thread. However, only members who admired his book joined the discussion which made the thread one sided. These threads by Som could be interpreted

---

[474] Ibid.

[475] 9, 2007.

[476] Ibid.

[477] Padchadtang, 'PANTIP.COM: X5931862', 2007, <http://topicstock.pantip.com/wahkor/topicstock/2007/10/X5931862/X5931862.html> accessed 23 April 2015.

in two ways: first, they are his attempt to communicate with his readers, and second, the threads are his hidden agenda to familiarize his book to the Pantip users, and to gain some credit for his book. Som tends to insert some content from his book in almost every thread that he joined and always cites his book.

The disapproving view toward Einstein Phop Phraputtachao Hen

The disapproving views toward the book, are often more informative than the approving threads. Arguably, the users who initiated the criticism of the book's content often have some scientific or Buddhism background or they may have done some research before they posted the threads. To some extent, it could be said that the threads demonstrating the disapproval of the book are part of a more intellectual discussion. In comparison to the threads approving the book which comments lean toward discussing Buddhism's superiority over science. For instance, a thread by 'Phutosailom' with the title 'A request to the Amarin Group who published Sujira's books,' cites Tanaboonsombat's comments on the books.[478] The thread asks Amarin Group for its responsibility since it has published Sujira's books which were 'widely criticized on webboards and directly contact'.[479] He added 'If Amarin Publishing Group is going to continue its publishing practice like this, then it should state clearly on its

[478] Tanaboonsombat commented on a few aspects in the book that he considered 'incorrect' according to the scientific facts. For instance, Sujira states 'everything tends to be in chaos state after the Big Bang', Tanaboonsombat does not agree with Sujira as he believed that the statement is not always true, since it depends on whether it happens in the isolated or the open system. I shall not get into the detail of the criticisms here, more Information can be found at Buncha Tanaboonsombat, 'Science Being Distorted: The Case of Einstein Phop Phraphuttachao Hen' <https://www.gotoknow.org/posts/192799> accessed 24 April 2015.

[479] Phutaosailom, 'PANTIP.COM: X6997193', 2008, <http://topicstock.pantip.com/wahkor/topicstock/2008/09/X6997193/X6997193.html> accessed 23 April 2015.

books' covers that the content is the authors' opinion/view not academic knowledge'.[480] Although the majority of the replies supported the idea of disapproving the book from the initiated posts, e.g. the log-in 'Maewboss' states 'this book can be revised in a similar way to academic journal by adding another section on the discussion in the book's next edition.'[481] There were also opposing views. For instance, a reply by 'Chong 3 Charoendee' says 'It is business and the author has freedom to write whatever he wants under the law. It is up to the readers to think and criticize for themselves'.[482] Another view by 'WareZ' said, 'this book has provoked discussions and debates which are good'.[483] Two other members, 'Just ignore me' and 'Kaoeng' agree with 'WareZ'. 'Just ignore me' adds 'I read the book and it urged me to study physics more and to find out about Buddhism'.[484] Another user states 'Som compared Buddhist teaching with science; it is very provocative'.[485]

Another outstanding example of informative discussion is a thread by 'Alan the Lamb', he started a thread with a lengthy post pointing out a few compatibilities between science and Buddhism that Som shows in his book but he disagreed and consider them faulty.[486] 'Alan the Lamb' disagreed with the claim on the compatibility between the universe in Buddhist scripture and modern science, and the claim that the time dilation concept and the fourth dimension are in harmony with Vipassana.[487] He

---

[480] Ibid.

[481] Ibid.

[482] Phutaosailom, 2008.

[483] Ibid.

[484] Ibid.

[485] Ibid.

[486] Alanthelamb, 'Pantip: X8762697', 2010 <http://topicstock.pantip.com/wahkor/topicstock/2010/01/X8762697/X8762697.html> accessed 23 April 2015.

[487] Vipassana is a level of mental intoxication which could be reached in the higher level of practicing mindfulness. Information from

criticised it as 'this aspect and viewed are 'mua'.[488] Mua is a Thai word which could be translate to 'recklessly making claim'. Another example is a thread started by 'Tonick' asking 'Can anyone help and give some more explanation on the Theory of Everything? I read from *Einstein Phop Phraputtachao Hen*; it made me confused.[489] The replied posts offered substantial information regarding scientific theories e.g. 'jesdath' talked at length on the Theory of Everything.

In my examination of posts from Pantip users, I found that the book, *Einstein Phop Phraphuttachao Hen* encourages controversy. An excellent example is a thread started with a member 'Nok-E-Koy' asking 'Has *Einstein Phop Phraphuttachao Hen* been revised since there was news regarding the book making invalid claims?'[490] 'Fortuneteller' replied 'Don't pay attention to such book, mor Som looks down on Thai so he had cooked up the content and concludes that the Buddha is superior to Einstein. Some Thai with ill logic believe him.'[491] 'mm' adds 'this book should be ignored; even its basic content is incorrect.'[492] Conversely, 'Lpg_horse' states 'you guys only memorised what farang (foreigners) said and believe them; how dare you to attack the author and the Buddha.'[493] 'AVsystem' adds 'I like the book; I read and feel happy.'[494] Some of the

---

[488] Ibid.
[489] Tonick, 'PANTIP.COM: X7670999', 2009. <http://topicstock.pantip.com/wahkor/topicstock/2009/03/X7670999/X7670999.html> accessed 23 April 2015.
[490] Nok E-koy, 'PANTIP.COM: K8257916', 2009, <http://topicstock.pantip.com/library/topicstock/2009/08/K8257916/K8257916.html> accessed 23 April 2015.
[491] Ibid.
[492] Ibid.
[493] Tonick, 2009.
[494] Ibid.

comments used strong and impolite language e.g. 'GeneGTO' expresses 'I bought the book, finished reading it and gave it to my dog to play.'[495]

My summary of the Pantip discussion on the book is there were two main views towards the book. The first view was that this book was not a textbook and, therefore, as long as the book was interesting, the author was not required to explain comprehensively the theories. In contrast, the second view was that the content of any non-fiction book needed to be reliable; otherwise, it would cause many misunderstandings in the future. It is worth noting that some of Pantip users see the book as a representative of the Science-Buddhism dialogue as a whole, therefore for them criticizing the book means criticizing the dialogue. Therefore, by defending the book, in their minds, it could mean they are defending the Science-Buddhism dialogue at the same time.

It is not only Pantip discussion board that criticised *Einstein Phop Phraphuttachao Hen*, there were other websites that expressed concerns regarding the book. For instance, Son has written eleven online articles criticising the book published on his personal blog.[496] Son criticised Som for 'being reckless with making claims.'[497] Another main critic of the Book is Tanabunsombat who criticised the book on his webblog, and vchakarn.com website. His posts were reposted on a number of well-known websites, e.g. oknation.net, larndham.org, dmc.tv, and bloggang.com. Tanabunsombat's criticism

---

[495] Ibid.

[496] Son, *Einstein Phop Phraphuttachao Hen*, personal web blog. http://www.bloggang.com/viewblog.php?id=zol&date=31-07-2008&group=5&gblog=8, accessed 7 January 2015.

[497] Son, Pantip: X6886043, 2008, http://topicstock.pantip.com/wahkor/topicstock/2008/08/X6886043/X6886043.html, accessed 7 January 2015.

of the book had great impact, for instance, the major newspaper, *Krungthepturakij*, interviewed him twice, regarding his blog content, as discussed earlier. As a result of the wide coverage of his criticisms and debates, the chief executive and vice president of Amarin Publishing Group contacted Tanabunsombat to inform him that it would withhold the reprinting of the book until it resolves the faulty content. Tanabunsombat states in his weblog that the vice president asked him to help correct the mistake, however, he denied it because 'I do not agree with the concept of the book and correcting someone else's book, could upset the author.'[498] Tanabunsombat stated that the book had a significant number of errors in its explanation of physics' theories and that these may have been caused by the author's misunderstandings and misinterpretations. He classified the book's faults and author's misinterpretations into seven aspects in his weblog.[499]

5.3.2 The threads on the alleged quotation of Einstein

The second most discussed theme on the Science-Buddhism dialogue in Pantip was Einstein's alleged quotation. The Pantip archive received ten threads regarding the quotations. There are several versions of the alleged quotations presented on the threads; although the details in the different version of the alleged quotations may vary, the conclusions always remain the same, that being—'Buddhism is the religion that can cope with the scientific needs.' It is also the case for the alleged quotations disseminated in the popular books. The alleged quotation, I quote from the books earlier in the chapter, are almost identical on Pantip, particularly the conclusion. Additionally, as

[498] Tanaboonsombat, 'Wittayasat ti tuong pidpuen [The distorting of Sceience], personal web blog. https://www.gotoknow.org/posts/192799, accessed 1 December 2014.
[499] Tanaboonsombat, 'Wittayasat ti tuong pidpuen [The distorting of Sceience], personal web blog. https://www.gotoknow.org/posts/192799, accessed 1 December 2014.

stated, it seems that popular books on the indigenization of Einstein are the sources of the threads or have inspired the threads, particularly, *Einstein Phop Phraphuttachao Hen* and *Einstein Tam Phraphuttachao Top*.

The threads regarding the alleged quotation were very lively with a number of posts clearly demonstrating the users' interest. The discussions sometimes lead to serious disagreements. For instance, a member, 'Venture' posted two threads regarding the alleged quotes in one week.[500] However, he provided different references for the same quotations, the sources for the quote, as he put it, is the *'The Human Sides'*. [501] Another source he cited was spaceandmotion.com.[502] He expressed 'Einstein's words have some hidden meanings that are waiting to be discovered; the Big Bang theory or the theory of everything was already discovered by the Buddha 2,500 year earlier.'[503] It is noted that the content of this thread is almost identical to another thread which was posted in June 2006 by a member with nick name, Dead Cell.[504]

I found that the threads regarding the alleged quotation share a certain pattern. They begin with similar titles, e.g. 'Einstein mentioned Buddhism from a scientific view; it recommends the discovering of one's own answer'.[505] Other examples of the threads'

---

[500] Venture, 'PANTIP.COM: X8078603', 2009, <http://topicstock.pantip.com/wahkor/topicstock/2009/07/X8078603/X8078603.html> accessed 24 April 2015. And Venture, 'PANTIP.COM: X8091053', 2009, <http://topicstock.pantip.com/wahkor/topicstock/2009/07/X8091053/X8091053.html> accessed 24 April 2015.

[501] Since Venture did not provide the full reference. I assume that the book he referred is *Albert Einstein, The Human Sides: New Glimpses from his Archives*.

[502] http://www.spaceandmotion.com/Theology-Albert-Einstein.htm

[503] Venture, 2009.

[504] Deadcell, Pantip: X4449759, 2006, http://topicstock.pantip.com/wahkor/topicstock/2006/06/X4449759/X4449759.html, accessed 12 September 2014.

[505] Venture, Pantip: X8078603, 2009, http://topicstock.pantip.com/wahkor/topicstock/2009/07/X8078603/X8078603.html, accessed 12 September 2014.

titles read 'Einstein talked about Buddhism before he passed away'.[506] The first posts often offer the alleged quotation with short comments by the users who posted them, these comments often demonstrate the proud feeling of being Buddhist. For instance, 'Thepphaphut Kitarleed' claims that 'Einstein appreciated Buddhism because he had read *Tipitika*.'[507] Another example by 'Khonklang' asserted that 'Buddhism is science because it is reasonable.'[508] Among these ten threads on the alleged quotation of Einstein, only one presents a distinctive view from the rest; it began with the disapproval of the quotation.[509] While the other threads presented the approving view towards Buddhism of the member who started the threads, this thread however, represented the doubt about the reference of the quotation, its title is 'So Einstein did not say that Buddhism is the religion that can cope with the future'.[510]

The key source that these threads cited (if they cited at all) is *Albert Einstein, The Human Sides: Glimpses from his Archives*.[511] The reference given in the threads convinced some members that the quote exists. However, it seems that none of those members had checked or had the intention to check whether the book contains the alleged quotation. Some of the commenters seem to be happy that there is a reference provided. Since each thread always contained posts from the users who believe that the

---

[506] Deadcell, 2006.
[507] Thepphaphut Kitarleed', 'Pantip.com: X11385745', 2011, <http://topicstock.pantip.com/wahkor/topicstock/2011/11/X11385745/X11385745.html> accessed 24 April 2015.
[508] Khonkhlang, 'PANTIP.COM: X10295847 Buddhism and Science' <http://topicstock.pantip.com/wahkor/topicstock/2011/03/X10295847/X10295847.html> accessed 24 April 2015.
[509] Genecist, 'Pantip: X6862410', 2008, http://topicstock.pantip.com/wahkor/topicstock/2008/08/X6862410/X6862410.html, accessed 9 June 2014.
[510] Ibid.
[511] Helen Dukas and Banesh Hoffmann eds. *Albert Einstein, the Human Side: Glimpses from His Archives*, Princeton University Press 2013).

quotation exists and the users who do not, it had created inevitable tension between these two groups of users. An example of the thread started by a member with user name, 'Geneticist' initiated the thread by complaining about his previous thread which was reported and deleted by the Pantip monitoring team, therefore he started the new thread.[512] Geneticist added 'my earlier thread asked for the reference of the alleged quotation and no one could have given the precise reference then the thread was reported and deleted.'[513] The thread contained eighty-six replies; the main participants in the thread are Geneticist who started it and Venture who had also posted two threads on the alleged quotation. However, Venture' and Geneticist's views on the quotation are in opposition; their strong roles in the debate seem like rivals but to some extent I believe had made discussion very dynamic.

In this thread, the discussions went toward serious disagreements as a result of which the website's administrator deleted several replies.[514] The replied posts in the thread suggested that there were a few other threads posted earlier than this thread regarding the quotation on Pantip but the debates involved strong language and that why it was deleted. Geneticist clarified his view that 'my real concern is not on Einstein's view towards Buddhism; my concern is some authors who represent the misattributed quotation in their books and made money out of that. I think the practices are not beneficial to either Einstein or Buddhism.'[515] Geneticist was abused in the thread by another participant, FREE_OFFICER, who later apologized and deleted eight replies that

[512] Genecist, 2008
[513] ibid.
[514] Pantip has a monitoring system stating clearly that posts contain impolite language will be deleted. Moreover, Pantip administrators inspect any thread which was reported by its members, and then make decision whether to delete it.
[515] Genecist, 'Pantip: X6862410', 2008.

he posted himself. This thread is an example of the heated debate on the Science-Buddhism dialogue, particularly the indigenization of Einstein.

I found that there are two main views in the threads on the alleged quotation: first, the participants who believed that the quote belongs to Einstein despite the inaccurate reference. Some examples of the users' views are: 'Einstein must have said it somewhere', 'I think Buddhism is top-notch science, particular the Four Noble Truths.' and 'I don't care what Einstein had said, from my point of view Buddhism is the best and the most superior scientific knowledge'.[516] Second, the participants who believe that since there is no reference of the quotation therefore it is clear that Einstein did not say the statement. This group disagrees with the attempts to validate Buddhism by science/ Einstein because Buddhism is valuable without the need of scientific validation.

Determining the precise figure of the Internet users who read the Pantip's threads regarding the Science-Buddhism dialogue, is not possible since Pantip does not collect the page-view data. However, my search shows that the Pantip threads were reposted in other websites. Those websites had varied focuses, such as: Buddhism-focused websites, larndhram.org, and palungjit.com; online discussion forums, suanborad.com, and ThaiSEOboard,com; educational websites, vcharkarn.com, gotoknow.org; hot issues and news website, dramaaddict.com; personal weblog, blogang.com. Moreover, Tanaboonsombat, who is an active critic of *Einstein Phop Phraphuttachao Hen*, posted his criticism of the book in his personal blog and vcharkarn.com website. The Pantip user, Son, who I have mentioned earlier, has published his critiques of the book in his

[516] Ibid.

weblogs.[517] They were viewed 3,532 times, the most viewed topic in his weblog. It is evidence that the book has received a significant attention reflecting the substantial interest to the science-Buddhism dialogue at the same time.

These threads are examples of the discussions on the indigenization of Einstein which contained both agreements and disagreements on the subject. The differences of views towards the indigenization of Einstein has created inevitable tension.

5.4 Discussion

This chapter investigates the process of the indigenization of Einstein and draws on popular books, selected newspapers, and Pantip. My main finding is the indigenization of Einstein and/ or his theories engages in a two-steps process. The first step of the indigenization is to develop the perception of the compatibility between Buddhism and Einstein by either demonstrating that Einstein's theories are compatible with Buddhism teachings (some authors may refer to the content in *Tipitaka* (Pali canon), while others do not refer to any source, and only vaguely refer to the Buddha's word). Another way of demonstrating the compatibility was by claiming that Einstein had practiced Buddhism; some authors praised him with great Buddhist's characteristics. The claim is vast in scope, however without any solid evidence that Einstein was indeed a Buddhist.

The second step of the process of indigenizing Einstein was in attempting to convince the reader of the superiority of Buddhism over science; the practice was conducted in two ways. First, by arguing that although there are a number of

[517] Son, personal blog. http://www.bloggang.com/viewblog.php?id=zol&date=02-10-2008&group=5&gblog=14, accessed 2 Jan 2015.

harmonious aspects between Buddhism teaching and science as elaborated in the first step, Buddhism has revealed such knowledge before science, at least two thousand years ago. Therefore, science is only recently catching up with Buddhism. Second, another way of indigenization through establishing the superiority of Buddhism over science, is by using Einstein as a stamp of approval by twisting Einstein's genuine quotation regarding Buddhism, to suggest that 'If there is any religion that would cope with the scientific needs; it will be Buddhism'.

The key aim of the indigenization of Einstein and the Science-Buddhism dialogue in the popular account is to offer comfort to the Thai Buddhists (both authors and readers). As shown in Chapter 3, the science-Buddhism dialogue thrived when there were concerns of western influences, although it seems ambiguous to identify the country or the actual practice that the Thai fear. The indigenization of Einstein in the popular accounts flourished after the political unrest and the economic crisis in 1997 Perhaps, by using Einstein, who is portrayed universally to be a genius and celebrity scientist, and has made 'a contemporary revolution', to verify Buddhism, could offer firm support to the argument that Buddhism is superior to science.

Among the three media that I examined, the popular books, the newspapers and Pantip online discussion forum, I found that popular books played the substantial role in indigenizing Einstein, while the Pantip forum has been used as an arena for open dialogue on the indigenization of Einstein and the Science-Buddhism dialogue overall. The nature of the media which allows its users to participate quite freely is indicated by the diversity of views towards the practice, which contains both agreements and disagreements. The investigation of the online discussion forum strongly indicates the

middle-class's significant interest in the Science-Buddhism dialogue. However, I found that in terms of the diversity of the process of indigenizing Einstein, popular books provide the most varied accounts, since it is the medium that offers the advantage of space for elaborating detailed discussion the most among these three media. The indigenization of Einstein in popular books inspired the other media, particularly Pantip discussion forum.

Arguably, the indigenization of Einstein in the Thai landscape is inspired by P.A. Payutto, the well-respected Buddhist scholar monk, his lecture and later book have brought Einstein's genuine quotation regarding 'cosmic religion' to light, although P.A. Payutto's practices did not show an intention to indigenize Einstein.[518] However, it is clear from this book and his other books that he praises Buddhism over science.[519] He states that Einstein's quotation has inspired the title of his lecture and book, however, as an outstanding Buddhist scholar, P.A.Payutto has been recognized for explicitly citing references and for the very careful preparation of his material. He declares 'I have paraphrased the genuine quote to be my title'. Moreover, he adds '…please do not attach too much importance to this idea (Buddhism is the foundation of science), because I do not completely agree with Einstein's view. My disagreement is not with what he said, but that he said too little.'[520] Payutto discusses the aspects of his disagreement extensively in his book.[521] As discussed earlier, although P.A. Payutto cited and referred to Einstein's genuine quotations in his book, some authors who wrote

[518] P.A.Payutto. 1992.
[519] See for example, P.A.Payutto and B. Evans, *Buddhist Solutions for the Twentieth-first Century* (5th ed.), Bangkok, Buddhadhamma Foundation, 2000; P.A.Payutto and Dhammavijaya, *Buddhist Economics,* 2009. Online Ebook, http://www.urbandharma.org/udharma2/becono.html, accessed 27 May 2015.
[520] P.A.Payutto. 1992. 147-149
[521] Ibid., pp.31-62

books on the similar genre have echoed his idea but have twisted Einstein's quotations to reaffirm the superiority of Buddhism over science.

Since the publishing of P.A.Payutto's book, the indigenization of Einstein has become a significant theme in the science-Buddhism dialogue. At the same time, the number of books on the dialogue has significantly increased, as mentioned. The first decade of the twentieth-first century witnessed the boom of popular books on the Science-Buddhism dialogue, there were twenty-one books on the subject published in the decade with the indigenization of Einstein as their main theme. There are a few prominent contexts that shape the dialogue. Firstly, the outside context as Einstein was promoted internationally in the American media with a prominent example of this being the *Time* magazine who declared Einstein as their 'person of the century' in their December 1999 edition.[522] In addition, 2005 was the World Year of Physics and the centenary of Einstein's 'Annus Mirabilis' and the publication of his special theory of relativity. Secondly, the domestic factor, because of the international promotion of Einstein, the Thai Ministry of Science launched a project in 2005 to celebrate Einstein's centenary; outcomes of the project included many pieces on Einstein across multiple media platforms.[523]

Another key finding is the lack of references to support some major claims in the popular account of the science-Buddhism dialogue, particularly the popular books, as clearly seen in *Einstein Phop Phraphuttachao Hen*. This book, one of my main focuses throughout, is easily the most well-known popular book on the Science-Buddhism

[522] *Time* magazine, 31 December 1999
[523] The Ministry of Science and Technology website

dialogue; it plays a significant part in the popular account of the indigenization of Einstein.

Arguably, the reassurance that the indigenization of Einstein offers to the middle-class Thai, is so great as to make the readers willing to overlook the facts and the lack of reference. However, the Science-Buddhism dialogue without referencing and sources, has made the debates less intellectual. Moreover, the circumstance demonstrates that authoring a book on the science-Buddhism dialogue genre requires rich background in both science and Buddhism. On the other hand, the reader also needs some background in both fields in order to be able to comprehend the content. However, it is clear that the theory of relativity is not easy to comprehend even for scientists; some may say it is incomprehensible. This fits well with the situation elsewhere in Western countries, for example, there was a claim that only twelve people in the world who understood the theory of relativity in the early twentieth century.[524] Similarly, Buddhism is neither easy to conceive as P.A. Payutto has discussed in that popular conceptions of Buddhist teaching have deviated from the original meanings in the Buddhist texts. He states that 'they (Thai) interpreted the meanings of Buddhadhamma differently; they took knowledge and older beliefs from other religions, the influence of local religion and culture and mixed it with Buddhadhamma.'[525] At the same time, as Seeger points out, Thai tend to have a 'blurred concept' of the Pali canon; they are more familiar with *Traiphum* than *Tipitika*.[526] This is evidence that generally speaking, Thais are not familiar with the Pali canonical core teachings. The fact could shed some light on the popular

[524] M. Missner, 1985, 'Why Einstein Became Famous in America', *Social Studies of Science*, 15, p. 275 <http://dx.doi.org/10.1177/030631285015002003>.
[525] P.A. Payutto and Olsen. 1995 p. 47
[526] M. Seeger, 2009, p.4

account of the Science-Buddhism dialogue which to some scholars does not seem to be an intellectual debate and has stirred some discussions. In addition, as shown in Chapter 4, Einstein's high profile in Thai popular accounts usually focuses on his biography rather than his theories. As a result, the perspective towards the popular account of the Science-Buddhism dialogue seems ambiguous as some readers praise while others criticise the book.

It is noted that the Internet seems to be the medium that expresses concern regarding the inaccurate reference the most, given it is the only medium among the three that allows its users to communicate their views quite freely. In addition, it is the media that the users are least censored in expressing their opinion.

In the next chapter, I will turn from Einstein's indigenization and the Science-Buddhism dialogue to the government's approach to the subject, in order to reflect the disparities between their focus and interest in science.

Chapter 6

A contrast between the Approaches and Practices of the Government's Science Communication and the Middle Class

In contrast to discussions in previous chapters on Thai middle-class's significant interest in contemplative science, this chapter reflects on the Thai government's focus on science as a tool of economic growth and potential for empowerment of Thailand's economic and national competitiveness. However, I show that the Thai government has yet to achieve the results it seeks i.e. to persuade the middle-class public that it should now treat science as crucial to the nation's material well-being rather more than to the spiritual well-being of individual Thai people. By comparing the government's science implementations with the popular accounts—i.e. interest in Einstein and the Science-Buddhism dialogue—I wish to show the differences or similarities, if any, of focus in science related interests which may have been a significant challenge for the government.

As mentioned in Chapter 2, each successive government had slightly varied policies on science and organizations to take responsibility in science communication practices. The usage of media outlets were also varied depending on the policies. This chapter examines the key organizations' projects aiming at communicating science to the public i.e. the National Research Council of Thailand (NRCT) project of publishing popular science books, the Thailand Research Funding (TRF)'s projects of recommending good science books, the National Science and Technology Development Agency (NSTDA)'s books publishing and television programmes sponsorship and the National Science Museum (NSM)'s exhibitions including its online exhibitions.

This chapter also presents a result from my survey of the science museum visitors. Due to the constraint of the NSM's data on its visitors, it was necessary to conduct my own survey.[527] However, my survey results have limitations, in that the sample is small with only two hundreds respondents. Moreover, the result regarding the visitors' satisfaction towards the science museum exhibitions needed to be interpreted with caution because it could not avoid a common problem of the respondents answering what they thought I expected to hear. However, I believe my thesis is beneficial to some extent from the survey; at the very least it gives a better picture of the character and make up of museum visitors.

6.1 The popular science books published by the government (NRCT, TRF and NSTDA)

This section investigates the Thai government's popular science books publications, mainly issued through three organizations the NRCT, the TRF, and the NSTDA. I examine the popular science books published by these organizations, which reflect the government's focus. My examination concentrates on whether these organizations had acknowledged and responded to the public's significant interest in Einstein and the Science-Buddhism dialogue.

6.1.1 The popular science books published by the government's organizations: the National Research Council of Thailand (NRCT)

The National Research Council of Thailand (NRCT) is the first governmental department that published Einstein's biography and his theories in 1965, as mentioned in Chapter 4. The NRCT published two popular books, *Albert Einstein* and *Ekkaphop Lae*

[527] I interviewed the museum's deputy director for information on the policies and practices who acknowledged the challenge of surveying the visitors. Thus, the museum has only demographic data on the visitors.

Doctor Einstein [The Universe and Dr. Einstein] through its translation project which is still in operation. Since content of these books and the practice of publishing these books is discussed in Chapter 4, I will not repeat information here.

6.1.2 The popular books published by the National Science and Technology Development Agency (NSTDA).

The NSTDA is an important organ for science communication in Thailand. It has mainly used two media vehicles in communicating science to the public, popular books and television. In this section, I investigate the NSTDA's practice of publishing popular books. Books published by the NSTDA are divided into seven sections: technology and innovation, electronics, computer and information, biotechnology, material technology, children and youth, and science in media. Some of these book sections reflect the NSTDA's major research areas. The majority of their books suggest that they were written for educational purposes, and some titles are even on technical terminology. Examples of the science in media category include *Plaitanoids Super* (written in English without Thai title), and *Kan Wikhro Lae Okbaep Rabop [System Analysis and Design]*. For some titles, it is immediately apparent that they are published research papers. It is notable that a significant number of titles are written in English rather than Thai, which suggests its niche target reader. Examples of English-language publications by the NSTDA include: *Materializing the Immateriality*; *Chitin-Chitosan Technical Note No.1; Thai Rice*; *Microalga Biotechnologies;* and *Recent Development and Prospects for Developing Countries*. The books in the Children and Youth category are less technical than other sections and focus on general science for a younger audience. Publications aimed at a younger audience and published by the NSTDA include: *Phachonphai Phai Kap Lok Bai Lek [The Adventure in the Tiny World: The Amazing DNA]*; *Watsadu Chuan*

Sanuk Ton Seramik [Material for Fun: Ceramics]; and *Wittayasat Nai Khong Len Phuen Ban Thai [Science in Traditional Thai Children's Toys]*. In contrast to some of their publications aimed at an older audience, these are all written in Thai, not English.

From the examination of the books published by the NSTDA, I found that the NSTDA's content-selecting process for its publications does not rely so much on what readers want to read, but rather on what research papers or manuscripts it happens to have. This practice is in opposition to the practice of the commercial publishers whose decisions on what to publish is largely guided by what will appeal to the Thai audience and thus will sell well. Sasithorn Tesassapark, the NSTDA's bookstore and publishing manager, states that NSTDA produces two kinds of books: proceedings of conferences and workshops, and general science books.[528] Conference proceedings left over from conferences are put on sale and, because they are not intended for a general audience, their content is often very deep and narrow. Popular science books produced by the NSTDA printing department are aimed at general audiences, so the practice of selecting manuscripts here is similar to that of commercial publishers.

As my study shows, the NSTDA's books prices were also subsidised, keeping their book prices rather low in comparison to the average price of commercial books. The NSTDA's average book price, at 156 THB, is lower than the average commercial book price of 168 THB, according to SE-ED data (about 3 GBP at currency of 55 THB per 1 GBP). In addition, the NSTDA's lowest book price is 35 THB, a sum of money that would be insufficient to buy most books by the general market. From my point of view, it seems

[528] Sasitorn Tesassapark, the NSTDA bookstore manager, interviewed by Chinnalong, Phathumthani, 23 July 2011.

that the NSTDA does not aim to profit from its book publishing, but instead aims to promote scientific studies and research conducted by the NSTDA to the general public. Thus, the NSTDA subsidizes its books in order to keep the price as low as possible. Although Tesassapark did not answer my question regarding the NSTDA's books subsidisation, she did assert that the NSTDA's publications department aims only to cover the printing and distribution costs so that their books could be easily accessed.

In summary, the NSTDA's books have been used to publicise its research studies. As one of the government's main organizations taking responsibility of communicating science to the public, it fails to take into account its target group's interest as evidenced in the NSTDA's list of published books. None of the books themes directly related to Einstein or the science-Buddhism dialogue.

6.1.3 The popular science books recommendations project by the Thailand Research Funding of Thailand (TRF).

This section investigates the projects which focused on recommendations of popular science books—the '88 Good Science Books' project launched in 1999 and the '100 Good Science Books' project launched in 2009—supported by the Thailand Research Funding of Thailand (TRF), a governmental organization. Additionally, I also briefly mention 'The bibliography of 100 good books that a Thai should read' which is the first project on the series of popular books recommendation projects. These projects were published as popular books.

The popular book recommendation projects are the responses of the government's great concern on the lack of interest in reading among the Thai public.[529]

[529] The Thai government attempts to overcome the lack of reading challenge by promoting a reading culture among the public. In 2009, the government declared that the decade between 2009 and 2019 would be the 'Thailand reading decade' and declared its plans to launch campaigns throughout the

The book recommendations were part of the scheme of encouraging the reading culture. The first project was titled and published as 'The bibliography of 100 good books that a Thai should read'; it was funded by the Thailand Research Fund (TRF) in 1997.[530] The project recommended a book on the science-Buddhism dialogue, *Kitchanukit*, the earliest published book on the genre. The recommendation of *Kitchanukit* shows that to some extent, the contemporary government played a role in promoting the Science-Buddhism dialogue.

In 1999, the project was launched entitled '88 good science books'; it was also funded by the Thailand Research Fund (TRF). The project was published as a book in 2002.[531] The project team was led by Chaiwat Khuppatrakul, the well-known physicist and a popular science writer in books and newspapers, mentioned in earlier chapters.[532]

The project defined 'science' as 'something beyond pedagogic science, rather the sense of science used here is broader, encompassing knowledge of nature.'[533] The definition that the researchers were giving is actually the concept of 'popular science'. However, the concept of 'popular science' does not exist in Thailand and consequently, there is no Thai term for 'popular science book' as mentioned earlier. The research team faced difficulty in finding the right term for 'popular science book' and had no choice but

---

decade. This policy includes plans for a significant number of public libraries to be built in order to encourage people to read. (source: *Komchadluek* newspaper http://www.komchadluek.net/detail/20090805/23186/ assessed 24 June 2011.

[530] The project aims at encouraging Thai people to read and to show them that there are many interesting and worthwhile books available to read. The project's recommended books cover varied genres e.g. history, politics and economics, arts and literature, social science and anthropology, religion and philosophy, and nature and science.

[531] C. Khuppatrakul and collaborators, 2002, *The Bibliography of 88 good science books.* Bangkok: Doublenine Pres.

[532] Khuppatrakul, also was a researcher in the '100 Good Books that Thai Should Read' project team, had commented in the project that science books is a category that should be surveyed separately and further research was needed to search for good science books.

[533] C. Khuppatrakul et al., 2002, p.27

to name the project '88 good science books' although they wanted to communicate that these were general and popular science books rather than scientific textbooks.

The research team consisted of ten members: five of whom were scientists or at least held a Bachelor's degree in science; four of them were writers and/or columnists; and one who was an educator who held a Bachelor's degree in chemistry. In addition, the advisory committee comprised of six members: three of them were highly respected scientists and the other three were reputable science educators. Given that the majority of those in the research team were scientists, it can be said that the bibliography of '88 good science books' was, in reality, a list of books that Thai scientists believe that are good for the public. Having said this, it is not necessarily proven that the public would agree with the list of books drawn up by the scientists.

The main objective of the project was to select any book that illustrates 'Phumpanya Thai Choeng Wittayasat' [Thai wisdom with a scientific base]. The definition of the term was vaguely stated, as 'Thailand is not a source of science knowledge and, as such, it was difficult to find science books covering scientific advances made by Thai scientists.'[534] The researchers set up the following criteria to select books. Consequently, these criteria were used in another project, the list of '100 Good Science Books' which was conducted after the '88 Good Science Books' project.

1. The book must have been originally written in Thai.

2. The content should cover science or nature or environment or the relationship between science and philosophy, religion, or society and culture.

[534] C. Khuppatrakul et al. 2002, p.28.

3. The research team would consider every book dating back to the appearance of the print form.

4. Only science books targeted at a general readership would be taken into consideration.[535]

It is noticeable that the projects' aims and criteria demonstrate the government's attempt to indigenize Western science by applying nationalism and creating the concept of 'Phumpanya Thai Choeng Wittayasat' [Thai wisdom with a scientific base]'. The project aims to recommend only popular science books written by Thai authors, although as Chaiwat states, it is unlikely that Thai has originally discovered any scientific finding. Thus, the researchers were seeking books with 'Phumpanya Thai Choeng Wittayasat' [Thai wisdom with a scientific base]'. The popular science books recommendation projects are processes seeking to 'Thai-ify' science by embracing the 'scientific Thai wisdom', although the pursuit of science tends to be universally celebrated for human interest without highlighting the nations owning the knowledge. The idea of ownership and the system of the Intellectual Patent (IP) law apply to technological innovations and scientific researches; however, the Thai government and Thai researchers (in this case) preferred to advocate Thai wisdom.

Next, I examine the content of the project to shed more light on the books they recommended in order to understand the projects. The list of '88 good science books' classified its recommended books into three main groups: fiction, documentary, and general knowledge.[536] It is worth noting that the researchers recognised a modest number of the Science-Buddhism dialogue themed books in the Thai book market, but

[535] C. Khuppatrakul et al. 2002, p.28.

[536] The researchers differentiated documentary from general knowledge thus: if the content contained the author's opinion then it was classified as documentary.

decided not to create a category reflecting this theme as it was not always clear which books belonged in this category.[537] They suggested that Science-Buddhism dialogue related books should be studied further.[538] The oldest book recommended was *Traiphum*, claimed to have been written in 1345 by the King of Sukhothai, Lithai.[539] *Traiphum* being recommended in the modern day as a good 'science book' is intriguing as it was criticised in the late nineteenth century as 'outdated', as discussed in Chapter 2. It is clear that some explanations in *Traiphum* are not compatible with modern science, yet it was recommended as a 'good science book'. I interpret the recommendation of *Traiphum* as another example of the sense of nationalism that the Thai government conducts to create 'Thai science', an evidence which supports my argument.

The list of '88 good science books' recommends three other books on the Science-Buddhism dialogue apart from *Traiphum,* which are as follows: *Kitchanukit* (1867), *Huang Mahan Nop [Cycle of Birth and Death]* (1958) and *Phuttasatsana nai Tana Pen Raktan Khong Wittayasat [Buddhism as Science's Foundation]* (1992).[540] These books were emphasised in Chapter 3, thus I will not repeat the narrative here. Instead, I move on to examine another science book recommendation and highlight the characteristics these recommended books have in common.

The list of '100 Good Science Books' is a similar project to that of '88 Good Science Books' project, it was also funded by the TRF in 2009. The project was conducted

[537] C. Khuppatrakul et al., 2002, p. 48
[538] C. Khuppatrakul et al., 2002, p. 48
[539] The book was translated into English by Reynolds Frank E. and Reynolds Mani B. (Asian Communities Press, 1982).
[540] Thippakorawong. 1867. Kitchanukit (A Book Explaining Many Things). Kukrit Pramoj. 1958. Huang mahannop [The Wheel of Life]. P. A. Payutto. 1992, 1998 Puttasatsana Nai Thana Pen Raktan Khong Wittayasat [Buddhism as the foundation of science].

by the same research team as that of the previous project with similar objectives and criteria to the '88 Good Science Books' project. However, the '100 Good Science Books' focuses on recommending the science books published in the period of 1994-200. The '100 Good Science Books' project recommends a book on Einstein entitled *Kae Roi Einstein* (*Einstein: Life and Success*);[541] and two books on the Science-Buddhism dialogue, *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (A Comparative View of Science and Buddhism)* and *Ongruam: Botwiphak Waduai Witthayasat lae Satsana Nai Sangkhom Thai [Holism: A Critical Review of Science and Buddhism in Society*].[542]

Kae Roi Einstein written by Sakda Siripun is the only book on Einstein recommended by the '100 Good Science Books' project while there are a great number of books on Einstein on the market, as mentioned in Chapter 4. Hence, it is worth exploring its exceptional characteristics. The committee states that the book is outstanding since 'it presents primary information which no other books on Einstein written by Thai authors ever cover' and 'its pictures which were taken by the authors'.[543] I found that the book is informative and although it was published as a popular book, it was written with academic style, the highlight is the references and bibliography. Moreover, in comparison with other books on Einstein's biography written by Thai authors listed in Chapter 4, I found that *Kae Roi Einstein* is distinguished in containing the original photos taken by the author himself (the author had also visited places where Einstein had lived).

---

[541] Sakda Siripun. 2005. *Kae Roi Einstein (Einstein: Life and Success)*. Dansuta Kanpim: Bangkok.
[542] Rawee Pawilai. 2000. *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (A Comparative View of Science and Buddhism).* Bangkok, Buddhadhamma Foundation. Phiphat Phasutharachat. 2005. *Ongruam: Botwiphak Waduai Witthayasat lae Satsana Nai Sangkhom Thai [Holism: A Critical Review of Science and Buddhism in Society]*. Krungthep: Sayam.
[543] C. Kruppratakul, et al. 2000, p.135

In total, the books recommendation projects listed five books on the Science-Buddhism dialogue to be 'good science books'. However, the most popular book on the Science-Buddhism dialogue, *Einstein Phop Phraputtachao Hen*, was not on the list since it was published in 2006 when out of the project's criteria timeline range. In my interview with Chaiwat, I asked his view on the book, but he seemed cautious and briefly commented that the book initiated a new perspective on science.[544] I understand that Chaiwat's caution could have been that the book was criticised quite seriously by some readers and he has given the famed book an endorsement which appears in every edition of the book. Therefore, it could make him reluctant to comment on the book.

It is intriguing that only five books were recommended from the more than sixty books on the Science-Buddhism dialogue genre on the market. These recommended books seem to share two main characteristics. Firstly, the majority of these books were written by well-respected authors, i.e Thippakorwong, who wrote *Kitchanukit,* was a Minister who worked closely with King Mongkut (r. 1851-1868), and M.R. Kukrit Pramoj (1911-1995) who wrote *Huang Mahan Nop [Cycle of Birth and Death]* (1958). Pramoj is a man with many talents.[545] He had remarkable careers: first, as Prime Minister in 1975-1976, he had set up Thailand's first political party, Kaona Party [Progress Party]; secondly, as a journalist and owner of newspaper, *Siamrath,* and thirdly, he was also a prolific author of numerous books. The committee of '88 good science books' states '*Huang Mahan Nop* is well-known; it was reprinted a number of times, although it is not clear how many times it was reprinted.'[546] Kukrit states that his book's aim is on

[544] C. Khuppratrakul. Interviewed by Chinnalong, Bangkok, 2010.
[545] Ban Kukrit website. http://www.kukritshousefund.com/index.php?lay=show&ac=article&Id=533312, accessed 12 April 2015.
[546] C. Khuppratrakul et al. 2002. *Review of 88 Good Science Books*. Bangkok: Double Nine Publishing. Bangkok, Doublenine.

'applying the content of biology for proving the accuracy of the Buddhist teachings.'[547] The book claims that the Buddha foresaw what we now call biology; it provides a few examples to support its claim e.g. the Buddha's explanation regarding the cell, and the origin of life. Kukrit claims that the Buddha explained how a cell divides to make a new life although he used different terminologies from that used in biology.[548] Another book recommended, *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (A Comparative View of Science and Buddhism)* was written by an astrophysicist Rawee Pawilai who is also well-known as a scientist who proposed the view of the compatibility between science and Buddhism. The detail of the book is discussed in Chapter 3 and 5.

The second characteristic of these recommended books on the Science-Buddhism dialogue is their arguments on the compatibilities between science and Buddhism. To shed some more light on the features of the recommended books, I compare them with the famed book, *Einstein Phop Phraputtachao Hen* and some other books on the Science-Buddhism dialogue published in the 2000s, emphasised in Chapter 5. The finding strongly suggests that the recommended books tend to propose relatively intellectual debates on the compatibilities between science and Buddhism, rather than indigenizing Einstein or science, although without references, to serve the purpose of showing the superiority of Buddhism over science. The authors of the recommended books did not carry the claims of compatibility as far as the famed book, which results in the arguments being seen by some readers as unconvincing.

---

[547] Kukrit Pramoj. 1958. *Huang Mahan Nop [Cycle of Birth and Death]*. Phra Nakhon, Kaona.
[548] K. Pramoj. p. 48.

The book recommendation projects clearly demonstrate the government's approach of creating 'Thai science' as stated in their criteria of recommendation that the project seeks for popular books representing 'Thai scientific wisdom'.

6.2 The science television programmes by the NSTDA

The NSTDA's mission to raise public science awareness operates by communicating science through television programmes, popular science books and some science-related activities. It is worth noting that television is the most expensive medium for an agency to sponsor in comparison to the cost of museum exhibitions because television programmes have a very short life. However, television has the highest consumption compared to other media since it reaches almost every Thai household in both urban and rural areas, as mentioned in Chapter 2. Thai's average time spent on watching TV is the highest of any other medium.

The NSTDA's sponsored television programmes can be classified in two groups: programmes produced originally in Thai language and imported programmes. The first television programme that the NSTDA sponsored in 2006 was originally produced in Germany called 'Mega Clever'. The NSTDA bought the programmes and hired a Thai television production house to adapt them, and set up a team to help supervise the production house.[549] The programme was entitled in Thai: 'Mega Clever: Chalad Sud Sud', 'Chalad Sud Sud' the Thai was added to the original title. The programme was so popular hence the NSTDA sponsored it for three years (2006-2008). 'Mega Clever: Chalad Sud Sud' is a science quiz show with the highlight of showing science experiments as answers to those questions. For instance, in the episode broadcast on 6th April 2006,

[549] Phuchadkan Online newspaper, 8th May 2005 http://www.manager.co.th/Science/ViewNews.aspx?newsID=9490000057301, accessed 10 June 2011.

the question was 'which one of these choices can cook fish?'; the choices were a solar cell panel, a bath tub, and a dishwasher. Another episode's question was 'which is the best choice for cooling down the heat of chillies?'; the choices were warm water, Vodka, and non-alcohol beer. The answers to these questions were shown as experiments in front of the competitors in the studio.[550]

The NSTDA has indigenized the 'Mega Clever: Chalad Sud Sud' in a few respects; firstly, it was dubbed into Thai language while the main German presenter remained. Secondly, its title was adjusted by adding the Thai phrase Chalad Sud Sud [very intelligent] at the end of the original name. This practice applies to all the foreign television programmes' titles that the NSTDA sponsored, their titles retaining their original names with 'Chalad Sud Sud [very intelligent]' added. Thirdly, each episode was added with the NSTDA's scientific research update called 'Sanuk Khid Kap Sor Wor Tor Chor' ['Enjoy thinking with the NSTDA']. This part was made domestically under the NSTDA's guidance. These practices demonstrate the government's approach of indigenization which also shows in other television programmes by the NSTDA as well.

In 2009, the NSTDA imported another Australian television programme, 'Beyond Tomorrow' with similar practice to 'Mega Clever: Chalad Sud Sud'. The Thai version of 'Beyond Tomorrow' was named 'Beyond Tomorrow: Chalad Lamlok' ['Beyond Tomorrow: Beyond Genius']. Again, the programme was indigenized in several aspects: firstly, by adding a Thai phrase containing the word Chalad ['intelligent'] to the original programme's title; secondly, the original programme was a documentary with voice-over narration, but in the Thai version added a Thai host; and thirdly it was dubbed into

[550] I have watched the clip of these episode on Vchakarn.com website. However, the link was broken, therefore, these clips can no longer be watched in June 2015. http://www.vcharkarn.com/vcafe/49410, accessed June 2014.

Thai language. In 2010, the NSTDA imported a Korean science quiz show called 'Sponge' and renamed it 'Sponge: Fongnam Adchariya Chalad Sud Sud' ['Genius Sponge, very intelligent']. The programme was an hour long and dubbed into Thai language. It is noted that these popular scientific programme titles show the association between science, Chalad [intelligent] and Sanuk [enjoyment] which seems to reflect Thai ideology which tends to equate learning with entertainment. Moreover, the Thai terminology for 'popular science book' that Buncha suggests also involves 'sanuk' [fun] as well, the term is 'Wittayasat An Sanuk' ['science for pleasure reading'].[551] The choice of words in these television programme titles reflects the public interest to some extent; enjoyment is always highly valued by Thai. Almost every Thai ceremony and festival activity, including funerals, is incorporated with enjoyable activities. In addition, intelligence, which is often taken to mean being educated, is one of the vital social values among middle-class Thai people nowadays.[552] These words were selected to put in the programmes' titles in order to attract the middle class which is the principal target audience, even though the NSTDA stated that the broader general public was its target.[553]

The NSTDA also sponsored a television programme produced domestically by Thai production houses. The hour long documentary programme was entitled 'Chao Wit Chid Chao Ban (Scientists stay closed to laypeople)', and had a female host. The content of the programme centred on promoting applied research studies conducted by Thai

[551] B. Tanaboonsombat, interviewed 2010.
[552] Nidhi Eoseewong discusses the middle class in many respects, including its value, in a few of his articles and books. Muk-hom Wongthed is another scholar who wrote about middle class values and characteristics.
[553] A. Trimek, a Vice President taking responsibility for 'science and technology for society' at the NSTDA, interviewed by Chinnalong, Pathumthani 10th July 2010

scientists, who often worked for the NSTDA. Therefore, in brief it could be said that 'Chao Wit Chid Chao Ban' is a programme used to publicise the NSTDA's works.

The examination of these television programmes' characteristics may shed some light on how to communicate science to the Thai public more effectively through television programmes. There are a few significant differences between these programmes, which could have a strong impact on their popularity. First, the programmes' characters are different. 'Mega Clever: Chalad Sud Sud' is a science quiz show with experiments attempting to demonstrate the answers of the quiz. In comparison, 'Chao Wit Chid Chao Ban', was a documentary.[554] It is not surprising that the latter was far less popular than 'Mega Clever: Chalad Sud Sud', because a quiz show in general tends to be more pleasurable for Thai audiences to watch than a documentary. It is clear Thai viewers favoured game shows, it was one of the top five most popular TV programmes in 2012.[555] Secondly, the content of these two programmes were dissimilar, the 'Chao Wit Chid Chao Ban's content being mainly on NSTDA's research while 'Mega Clever: Chalad Sud Sud''s content concerns everyday life stories, which is closer to the audience, e.g. an episode asked 'what is the length of a human's colon?' or 'what can stop the underarm from sweating?', etc. While examples of the *Chao Wit Chid Chao Ban* theme were: organic farming, nano-crystal glasses, and innovative rubber. The themes of the former programmes seem to be closer to one's daily life than the latter programmes; this could be another reason why it was more

[554] The NSTDA also sponsored Chalad Lam Ngan Wichai Thai [Thai researches is beyond intelligence] and Wan la nit Wit Thekno [A little of everyday with science and technology]. These two programmes have similar theme and content with 'Chao Wit Chid Chao Ban'.

[555] *Than* newspaper, online version, 17th March 2013: http://www.thanonline.com/index.php?option=com_content&view=article&id=174178:2013-03-15-08-05-14&catid=106:-marketing&Itemid=456, [accessed 1st April 2013].

popular. Thirdly, the 'Mega Clever: Chalad Sud Sud' had the vital element that attracts the Thai public: fun, as I discuss earlier is a vital part of Thai culture as demonstrated in its cultural activities. Therefore, it is not surprising that the 'Mega Clever: Chalad Sud Sud' contains the vital elements that make it very popular. Fourthly, the airtime is another significant aspect affecting the popularity of a television programme. 'Mega Clever: Chalad Sud Sud' was aired at 8.30 pm every Thursday while 'Chao Wit Chid Chao Ban' was broadcast at 10 am every Friday. The former is broadcast at primetime, which is the time that almost every channel broadcasts soap operas. 'Mega Clever: Chalad Sud Sud' is thus an alternative for some viewers who do not prefer soaps.

From my point of view, the NSTDA's television programmes may have helped the NSTDA gain public recognition. As Trimek, the vice president of the NSTDA, expressed, these television programmes fulfilled the NSTDA's aim of enhancing science awareness, the government's assignments.[556] However, it seems problematic to claim that sponsoring scientific television programmes with high ratings could enhance science awareness among the public, since it is far from straightforward that doing so has had the desired effect of increasing awareness and understanding of science. Although I agree with Trimek that these television programmes have earned the NSTDA public recognition, some episodes of the NSTDA programmes seem to be primarily promoting the NSTDA rather than communicating scientific knowledge.

My observation shows that the NSTDA's TV programmes' core themes are its own scientific research. Even imported programmes were indigenized by adding short clips of research studies by Thai scientists. To some extent, the practise could be read as

[556] Trimek, a Vice President taking responsibility for 'science and technology for society' at the NSTDA,) interviewed by Chinnalong, 10th July 2010

the attempt to publicise 'Thai science' underlying their nationalism. Moreover, the practice that the NSTDA conducted tends to follow the deficit model of mainly concerning on passing on the scientific knowledge. The NSTDA does not seem to be aware of the significant interest of the middle-class in the Science-Buddhism dialogue, hence it did not acknowledge the dialogue in its TV programme.

An important question arising from the NSTDA's practice is what science communication approach has the science policy makers and practitioners taken. It seems that their first priority is making the public recognize their research and organization, which they believe will gain them public support. For instance, Trimek, expressed, 'although our organization focuses on researches we need to sponsor television programmes so the public will know what we are doing. Every science agency needs to tell the public about the advantage of their researches.'[557] Overall in my opinion, the NSTDA's television programmes seem to amount to being 'public relations' of its scientific organizations rather than enhancing science awareness or empowering public understanding of science in Thailand.

6.3 The Thai National Science Museum (NSM)'s exhibitions

This section investigates the Thai science museum, a distinctive medium in comparison to the rest of the thesis's chapters. The NSM plays a major role in implementing the government's science communication policy. I begin by providing some background of the museum before examining its exhibitions. Moreover, as mentioned, I will shed some light on the NSM's visitors and the constraint of the data on the NSM's visitors. To obtain more information on this point, the quantitative

[557] Trimek, interviewed 10th July 2010

research is the most appropriate method since the qualitative method, using in-depth interviews, was not practical to collect mass information, although within the limit of my PhD thesis timeframe, I could only conduct a small survey of limited respondents. I conducted a survey to obtain such data that yields demographic data on the NSM's visitors, their satisfaction with the exhibitions, their attitudes towards science and their science consumption behaviour. Herein, I discuss my survey findings and carry out comparative discussion with other available survey results to shed more light on the implementation of the NSM.

The survey was conducted inside the NSM, with a sample of 184 respondents. I distributed 220 questionnaires, of which 200 were returned. Only 184 questionnaires were completed and could be analysed using SPSS programme. The questionnaires were distributed over a period of two weeks, covering weekdays and weekends to make sure that my sampling groups were randomly selective. I approached visitors in the waiting area located at the exit of the museum to make sure that I did not miss any visitors, in addition, my questionnaire asked the visitors' satisfaction with the exhibitions which is appropriate to ask them after they have visited the museum.

The sampling procedure began with my determination of visitors' age before approaching them since the University of Leeds's ethical regulation states that the eligible survey participants must be over sixteen years old, unless they are with parents or guardians. However, given most of the visitors came to the museum on weekday were students, therefore, it was quite easy for me to tell their age from their school uniforms. All visitors in uniform indicating that they are sixteen or over were approached. When I conducted my survey on the weekend, I approached visitors who appeared to be over sixteen, which I later confirmed.

Next, I approached visitors by briefly introducing myself; later on, I asked the visitors' ages to make sure that they were eligible (over sixteen) to fill in my questionnaires. As a result, my survey data will be different from the NSM's visitors' information because the NSM conduct their feedback survey on any visitor without age concern. According to the museum's data, the majority of the Thai science museum visitors are under sixteen years old. I was aware that in being unable to interview the majority group of the museum visitors may affect my use of the data. I expected the section on the respondents' satisfaction towards exhibitions to be informative as it could help in reflecting the audience's view towards 'Thai science' or 'phumpanya Thai (Thai wisdom)' that the NSM presents. However, the respondents showed similar levels of satisfaction towards each floor of exhibitions, as I will emphasise later.

6.3.1 An analytical overview of the NSM

The Thai National Science Museum (NSM) was officially opened in 2000. The government approved the plan in 1991 to celebrate Queen Sirikit's 60th birthday; construction started in 1994 with an allocated budget of 650 million Baht. The 1990s seems to have been the decade of science museum launches in Asia, as China, South Korea, Hong Kong, Taiwan and Thailand all officially opened their science museums in the same decade. The Thai NSM is the youngest of them.

The Thai NSM does not officially take any specific country's science museum as its role model, since the administration team paid visits to a few science museums in Europe and the United States to observe their exhibitions and activities.[558] However, I found that the London Science Museum has had a significant influence on the Thai NSM.

[558] Manop Issaree, the NSM vice president, interview by Chinnalong, Pathumthani 18 August 2010.

There are several pieces of evidence to support my claim. First, a British expert came to help with the museum's master plan in the process of establishing the NSM.[559] In addition the arrangement was organized by the British Council that also cooperated with the Thai NSM on other activities. Secondly, the NSM's fundamental purpose is to 'Sang Khwam Khao Chai Nai Wittayasart Lae Tegnology Khong Phrachachon' ('to enhance the public understanding of science and technology'). The Public Understanding of Science (PUS) was established in the United Kingdom with the Royal Society Report on the Public Understanding of Science, 1985. Thirdly, the first exhibitions launched at the NSM were imported from the United Kingdom.[560]

British models of science museums were not the only important ones; South Korea is arguably the only Asian country having a strong influence on Thai science. The NSM and the Korea National Science Museum are similar in a few aspects. Firstly, the concept and the name of the science park in which the museum is located. The Korean science museum is located outside of Seoul, in Daedeok Innopolis, which is similar to Thai Technopolis Park being located outside Bangkok.[561] However, the Korean museum has good public transportation: the visitor can reach the museum through ten bus routes, which are not available in the case of the Thai NSM. The locations of these science museums are completely different to that of the London Science Museum, which is right at the heart of London's museum district of South Kensington with easy access. It could be said that the London Science Museum is public-friendly, which is the opposite in the case of Thailand, whose construction plan seems to have attempted to

[559] M. Issaree, interviewed by Chinnalong, Pathumthani, 18 August 2010.
[560] Ibid.
[561] The Korea National Science Museum, http://www.science.go.kr/english/sub_12.html, accessed 23 February 2014

screen the museum visitors by its location and difficulty of transportation so that only the middle class could visit.

The easiest way to access the Thai NSM is by car or taxi because there is no bus service available. The location is not on the main road but on a very small road which is divided apart from the main road. On the main road, there are quite a few bus services running. However, in order to get to the museum, when one has reached the main road if one does not have a car, the only option is by sitting at the back of a hired motorbike, which takes about ten minutes. For visitors who have cars, the journey starts from the heart of Bangkok (Victory Monument); it takes at least two and a half hours – often more, to get to the museum, and during the rush hours the journey could take up to three to four hours. There were attempts by the museum administrators to solve this problem by cooperating with the bus service companies to run the direct route from city centre to the museum but the company could not make any profit so they decided to stop running the service. Therefore, the visitors now usually come to the science museum by school buses, private hired buses and cars.

In 2009, after the NSM had been open for nine years, it launched a new branch called 'science square', apparently to be more accessible. The science square is located next to Thailand's oldest university (Chulalongkorn University) and it is right in the business centre of Bangkok with the underground nearby. The science square aims to build science awareness; in order to achieve its objective it offers and develops knowledge resources.[562] The science square sets its roles to serve and be easily accessed by teenagers and the broader general public.

---

[562] Data from the science square website: http://www.nsm.or.th/nsm2009/chamchuri/index.php?option=com_nsmcontents&views=article&id=3&Itemid=3&lang=th, accessed on 28 April 2011.

With regard to objectives, the NSM states its main objectives as follows: firstly, to motivate and promote the importance of science, to encourage a positive attitude to science among the young generation, to serve as a scientific information centre and tourist attraction and to promote science and technology awareness among the Thai public.[563] The NSM seems to share some key similarities with other Asian science museums. The deficit model seems to be applied in these museums; the 'diffusion and popularization of science and technology' are their main aims. For example, the National Science Museum of Korea aims to 'diffuse science and technology knowledge and lead the popularization of science for living'.[564] The Hong Kong museum aims at providing a quality museum to 'popularize science to the public' and support science education in schools. By contrast, the Taiwan National Science and Technology museum states that it focuses on promoting 'technology education'.[565]

The NSM has established co-operative relationships with other science museums around the world. It is a member of several science museum networks e.g. ASPAC (Asia Pacific Network of Science and Technology Centres), ECSITE (The European Network of Science Centres and Museums), and ASTC (Association of Science-Technology Centre). They are cooperating mainly in sharing their experiences through conferences and workshops. The museum also had a Canadian museum administrator come to assist with management for a year after the beginning of the museum's launch; it is now hosting

[563] From the NSM website: http://www.nsm.or.th/nsm2009/index.php?option=com_nsmcontents&views=article&id=10&Itemid=20, accessed on 22 April 2011.
[564] The National Science Museum of Korea's website states that it was established in 1945 and in 1990 it had 'grand opening of contemporary NSM in Daedeok Innopolis - Operation of branch Science Museum in Seoul', source: http://www.science.go.kr/english/sub_12.html, accessed 1 April 2014.
[565]The Taiwan National Science and Technology museum http://www.nstm.gov.tw/english/InformationForVisitors/MuseumEnvironment/EnvironmentGuide.htm, accessed 1 April 2014.

an Australian volunteer who is experienced in science shows, helping to create new activities.[566]

One particularly distinctive feature of Asian science museums is their use of unique and eye-catching architecture to impress visitors on their first encounters. For instance, the China Science Museum locates a dome-shaped construction at the front used as an 'Astro-vision' theatre. It claims to offer its viewers a feeling as if they are participating in actual events rather than just watching a film.[567] The South Korean National Science Museum also has a dome-shaped planetarium.[568] In Thailand the NSM building is a shape of three connecting dice; each dices sits on the ground at one angle. The first director of the museum sought to amaze the public and to show the sophistication of the Thai architect who designed the shape of the building to be extraordinary.[569] A few of my interview respondents at the NSM stated that the triple-dice shape of the museum building impressed them.

[566] M.Issaree, interviewed 2010
[567] The China Science and Technology Museum, http://60.247.10.155:8008/portal/findportal.do?portalid=orgab4d636e0815e, accessed 1 April 2015.
[568] The National Science Museum of Korea's website, http://www.science.go.kr/english/sub_28.html, accessed 1 April 2014.
[569] M. Issaree, interviewed 18 August 2010.

Figure 6.1: The dice building, The National Science Museum (Thailand)

Concerning the NSM's audience, the general public is the target of the NSM as its standing point is to be the life-long learning resource for the Thai public of all ages. Nevertheless, the actual majority of visitors are schoolchildren.[570] The museum's annual reports state that more than 90 percent of visitors are students in the primary, lower and secondary school levels. Primary school students aged under 12 years are the most numerous among the three levels, at around 40 percent of overall yearly visitors. The rest of the NSM visitors are undergraduate students and families. The majority age of my sampling group is between seventeen to twenty years of age; the seventeen-year old visitors are the main group (22%). The majority of my sampling group (91%) come to the NSM on a school trip while 7% of the sampling came with family and only 1% are adults visiting the museum independently. Although, as I have stated, the NSM has been influenced by the London Science Museum in a few respects, for example, its visitors' demographic are different from the London museum. The majority of the London

[570] M. Issaree, interviewed 18 August 2010.

Science Museum's visitors are families (53%) while only 14% of visitors came with school trips and adults visiting independently were 33%.[571] Another possible reason for this difference is the location of the museums, as the London Science Museum is in the heart of London with easy access by public transport, conversely, the Thai science museum is in a remote suburb of Bangkok, without any public transportation. School trips with hired buses allow easier access to the museum than family visits for which people need to have their own cars. Moreover, as mentioned earlier, the majority (more than 90%) of the NSM's audiences were students coming on school trips, which suggests that visiting museums is not a favourite activity among the Thai public, although they are also among the NSM's target audience.

Regarding the number of visitors of the NSM, I found that the NSM had a sufficient number of visitors to maintain its viability, despite its remote location. A comparison between the number of the NSM's visitors and the London Science Museum's may shed more light on the matter. In 2011, the London Science Museum welcomed 2.95 million visitors. However, 32% of the London Science Museum's visitors were from overseas, whereas the NSM's audience may have included very few foreign visitors due to its location.[572] In 2011, the London Science Museum's local visitors numbered around two million and the NSM welcomed around 760,000 visitors.[573] The annual number of visitors at these two museums were comparable in size since Thailand

[571] Science Museum Group: annual report and account 2011-2012, p. 8.

[572] There is no record on the nationality of visitors on any NSM document. However, presumably there is a very limited number of foreigners, if any, visiting the NSM, given that during the two weeks of my questionnaires' distribution, I did not meet any foreign visitor.

[573] The Thai museum's records of visitors have been almost static for the last five years. For instance, in 2010, the museum welcomed around 800,000 visitors similar to 2011. (Source: the NSM's annual reports).

and the UK have similar population size, 67.7 and 63.2 million, respectively.[574] To make it clearer, in 2012, it was 3.16 percent of the UK population went to the London Science Museum; 1.2 percent of the Thai population went to the NSM. The figure reflects that with similar populations, fewer Thai visited the science museum than British. Moreover, Aphiya's thesis finding supports my claim; she found that museum visiting is not a habitual activity that the majority of the Thai public undertake. Therefore, the NSM may need to accommodate projects to attract more adults in order to achieve its goals.

6.3.2 The NSM's exhibitions

It is notable that while the NSM calls itself a 'museum', Manop Issaree, the NSM vice president, said that people he met in various international conferences regarding museum management suggested to him that the NSM is a science centre, rather than a museum.[575] He adds that he agrees with them, since the NSM does not hold any collection of science artefacts; its exhibitions are interactive with computer-based objects which make it fall into the category of a science centre. However, the Museum's name is already recognized by the Thai public so there is no point in changing it.[576]

The NSM exhibitions were designed for visitors to walk around freely without direction. However, the staircases are located at the same position on every floor.

---

[574] The UK population data is from Census 2011, http://www.ons.gov.uk/ons/guide-method/census/2011/index.html, [accessed 24 march 2013]. The Thai population information is from the Thai National Statistical Office, http://service.nso.go.th/nso/nsopublish/citizen/citizen.jsp, accessed 24 March 2013.

[575] M. Issaree, interviewed, 2010.

[576] As Durant states, science museums and science centres share some similarities, e.g. both provide for the general public, both offer science exhibitions and both attempt to invite visitors to explore their phenomena through some interactive-based exhibitions. On the other hand, two main differences are: science centres offer interactive devices which embody scientific principles with a minimum of textual guidance; visitors are encouraged to engage with these devices and discover the principles by themselves, while science museum exhibitions are scripted stories about science or technology told by many different objects, interactive and electronic media. Secondly, science centres do not embrace collections of scientific artefacts while science museums do. Source: J Durant. 2003, *Museum and the Public Understanding of Science*. Edited by John Durant. NMSI Trading Ltd, Science Museum, pp.8-10.

Therefore, a visitor could not skip any level without walking past some exhibitions. Manop asserted that the museum was designed to tell a story; the visitors could explore the exhibitions by themselves without guide. Although, there are some staff available around the museum, they are intended to encourage the visitor to engage with science artefacts.

There are two main kinds of exhibition in the science museum: permanent and temporary exhibitions, as is done in most museums. However, their website seems to be another channel that the museum uses to disseminate their exhibitions, along with the online exhibitions that are uploaded on its website. The temporary or special exhibitions are set up on special occasions, e.g. commemorations, hot issues, and life stories. Examples of some temporary exhibitions are: catastrophe, 'cosmology pavilion', flood, and tsunami.

The NSM contains five floors displaying permanent exhibitions:

- The ground floor is the main entrance and the exhibition of 'the pioneer scientists' and the history of electricity. This floor provides extra space for temporary exhibitions as well.
- The first floor shows exhibitions on two main themes: the invention of science objects and technology, and 'science land' designed especially for small children. The exhibition on the invention of science and technology focuses on science evolution in a few areas, e.g. communications, energy, Earth, space, substance, and human. In addition, the 'outstanding scientists views' exhibition shows the views of world famous scientists by using computer graphics to make a video of Galileo, Darwin and Einstein talking about their theories. The talks are in two languages, English and Thai, which allows the audience to choose the language that they prefer.

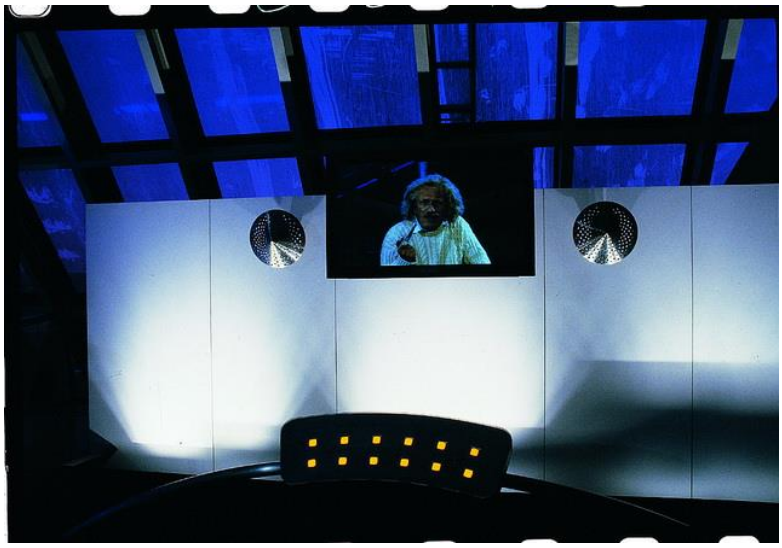

Figure 6.2: The exhibition of the outstanding scientist View

- The second floor focuses on basic science and energy; almost every exhibition on this floor allows visitors to interact with the objects. The exhibitions' themes are Mathematics, Heat, Friction, Chemistry, Electricity, Magnetism, Force and Motions, Matter and Molecular, Sound, Light, Power and Cinema.

- The third floor focuses on science and technology in Thailand; the exhibitions on this floor aim to offer visitors an understanding of Thailand's topography, location, ecosystem, agriculture, industry, geography, construction, and Thai geology.

- The fourth floor's focal point is science and technology in everyday life in five areas: home and office, body and health, transportation, quality of life, and the future vision. The exhibitions on this floor do not allow the visitors to interact with them; the stories run by the objects and textual explanations.

- The fifth floor is devoted to 'technology phumpanya Thai' the term which was translated by the NSM as 'traditional technology', however, I suggest the term 'indigenous Thai wisdom technology' may reflect the Thai term of the exhibition more

directly. The displays are divided into nine parts based mainly on the queen's royal projects on indigenous textiles, which are run by the foundation of the Promotion of Supplementary Occupations and Related Techniques of Her Majesty Queen Sirikit of Thailand (known as S.U.P.P.O.R.T). Moreover, the exhibitions displayed on this floor show carving technology, pottery technology, wickerwork technology, metalwork technology, textile technology, the heart of the house, the municipal puppet and Thai ways of life.

Figure 6.3: The exhibition of 'Thai indigenous technology'

Most of the displays in the Thai science museum are hands-on exhibits, with a few object-rich displays.[577] These hands-on artefacts allow visitors to learn through their own experiences. The objects-rich exhibitions, by contrast, are on Thai technology and indigenous culture, for instance, exhibition on silk textile technology, and wickerwork.

[577] The terminology used by the London Science Museum, http://www.sciencemuseum.org.uk/visitmuseum/galleries.aspx#, accessed 3 October 2014.

In light of the proportion of the exhibition, it is striking that two floors (the third and the fifth floor) of exhibitions of the total six floors (approximately 33 percent of the total exhibitions) present the 'Thai science and technology' related stories. The fifth floor in particular devotes to Queen Sirikit's royal projects and 'traditional' technology. I understand that the choice of locating the Queen's projects on the top floor was carefully made: this positioning illustrates the highest regard that the Thai people have towards the monarch. Moreover, the exhibitions suggest the vital role of the monarch in the science museum. This is so characteristic of science communication in Thailand; few other countries would have an exhibition on their monarch in their science museums. Most importantly, there is an exhibition section devoted to honouring the queen, it employs the largest section on the floor.

My finding suggests that although the NSM has strong potential to implement the government's science policy with regard to encouraging young generations to follow a scientist's career path, even though it is not its direct task (as mentioned its main aim is the general public). The NSM had so far taken the role as it is evidence in a few temporary exhibitions of Thai and foreign scientists e.g. Boonsong Lekakul, a late doctor who was fond of wildlife and had an eminent role in Thai wildlife conservation.[578] These exhibitions are biographies and highlights of their careers. When I visited the museum in 2010, the temporary exhibition of Thai students who won medals in the Olympiad Academic competition were displayed. These exhibitions could be a strong inspiration for young visitors to study in science and becoming scientists. However, they are displayed only for a limited time, which restricts the number of visitors. As discussed,

[578] The exhibition reads '100 Year Mor Boonsong Lekakul: the Gentleman of the forest exhibition', http://www.nsm.or.th/nsm2008/E-exhibition/Boonsong/popup.htm, accessed 4 Jan 2015

the permanent exhibitions in the science museum are mainly about basic science and technology, and concepts and theories that scientists found or invented, but there are only two permanent exhibitions that touch on scientists' lives, the pioneer scientists' exhibition and the 'outstanding scientists' views' exhibition. These exhibitions are quite dry as they contain the scientists' photographs and narratives on their biographies. A good example of how this might be done is the 'Science Laureates' exhibition at The Taiwan National Science and Technology Museum.[579] The permanent exhibition introduces the career path of a scientist, their scientific research procedure, the relation between Nobel Prize awards and everyday life, and the contributions of Nobel Prize winners' research. The NSM could have taken this as an example and launched exhibitions on Thai scientists who have performed outstandingly e.g. the Thai scientists awarded 'Thai outstanding scientists award', and introduction of their biographies.

As my main research finding demonstrates, the middle-class Thai have a significant interest in the Science-Buddhism dialogue focusing on engaging the indigenization of Einstein, and it is clear from its location and the limit of public transportation to access the main site of the museum, that the NSM could only attract the middle-class. Therefore, the NSM could respond to the middle-class's interest e.g. by launching a permanent exhibition on the Science-Buddhism dialogue. The exhibition could reflect the history of the dialogue and reveal the dialogue in contemporary Thailand.

[579] Science laureates online exhibition, The Taiwan National Science and Technology Museum http://www.nstm.gov.tw/exhibition/english/exhibitionroom.aspx?KeyID=cc0a8130-2721-416f-b7d7-1601e6447f67&floor=4, accessed 30 April 2015.

6.3.3 The NSM's online exhibitions

This section examines the NSM's online exhibitions presented on its website.[580] The online exhibitions contain ten categories: scientists, natural science (animal), natural science (plants), information technology, the earth and its environment, space and aviation, biotechnology, food science, indigenous technology, and other general subjects. I will focus mainly on examining the scientists' exhibitions section. The scientists' exhibitions section contains four exhibitions on four scientists, three international scientists and one Thai scientist. The exhibitions titles are: 'A letter to Mendel', '100 years of Bunsong Lekakhul (M.D.)' who wrote the first Thai birds guide, 'Charles Darwin who shifted the human belief', and 'Einstein'. Therefore, it shows that to some extent, the NSM has recognised the interest of Einstein among its audience and responded to the interest. The online exhibition about Einstein is divided into four topics: 'The discovery of theories', 'Einstein's life', 'Getting to know Einstein', and 'How close is your lifestyle to Einstein's?' The exhibition does not give credit to all of the sources of the information, except the section: 'How close is your lifestyle to Einstein's?' it cites Tanaboonsombat as the source, although without offering the detail.[581] 'The discovery of theories' explains briefly on three topics as follows: the theory of Special Relativity, the Photoelectric effect, and the Brownian motion. 'Einstein's life' shows Einstein's biography in timeline. The timeline of Einstein's personal life was described very candidly as follows:

---

[580] The National Science Museum website, [http://www.nsm.or.th/nsm2009/index.php?option=com_nsmexhibition&cid=124&lang=th&Itemid=86, accessed on 16th June 2012.

[581] The section is from B. Tanaboonsombut. S. Yoksan, and C. Khuppratrakul. 2005. *Einstein: Nueng Sattawat Heng Pi Mahatsachan (Einstein: One Decade of the Miracle year)*. Sarakadee: Bangkok. p. 144.

- *1896 Einstein fell in love with Mileva Maric, his Hungarian classmate*
- *1901 Einstein and Mileva arranged to meet in the North of Italy. Mileva was pregnant in the autumn and moved to live with her parents.*
- *1902 Mileva gave birth to her daughter, Lieserl, and she was adopted.*
- *1903-1904 Einstein was married to Mileva and their son, Hans Albert, was born.…*
- *1914 Einstein and Mileva were separated; Mileva moved back to Zurich.*
- *1917 Einstein was seriously ill and was taken care of by Elsa, his relative.*
- *1919 Einstein married to Elsa.*

The aforementioned narrative on Einstein's family seems to be the most detailed among all of his biographies published, particularly in the popular books. Despite offering in detail of Einstein's personal life, however, the depiction of Einstein's biography has been selectively depicted, similar to the depiction of him in the print media as discussed in previous chapters. For instance, the birth of Lieserl, Einstein's first child, is not referenced as a child who was born before marriage. The narrative seems to depict Einstein as an extraordinary virtuous man, with minimum stain in his personal life. Moreover, the space on the online exhibition devoted to his family life is considerably less than that on his work and his theories. In brief, the NSM's online exhibition of Einstein shares similar depiction of him in the mainstream's popular books account.

Most importantly, 'Getting to know Einstein' section contains two parts: 'Getting to know Einstein from other views' and 'Getting to know Einstein from his own view'. The latter section presents the alleged quotation of Einstein concerning Buddhism, the quotation I argue that it is at the heart of the Science-Buddhism dialogue in the

contemporary.[582] The NSM's dissemination of it is the proof that the alleged quotation is wide spread. Most importantly, the NSM as a government science organization has confirmed one of Einstein's greatest myths in Thai popular account. From my point of view, the NSM could have provided an intellectual perspective to the indigenization of Einstein rather than simply disseminating the quotation. Moreover, the NSM dissemination of the alleged quotation reflects the lack of research in producing the narrative of the exhibition which is one of the most important features in exhibition.

6.4 The revival of *Traiphum*

As elaborated upon in Chapter 3 on the significant role of *Traiphum* prior to the period of colonialism in the mid-nineteenth century, this section shows how the influence of *Traiphum* persists today. There are a few scholars who discussed the influence of *Traiphum* from different angles. Jackson studies the influence of *Traiphum* on Thai politics in contemporary Thailand,[583] and Reynolds reveals *Traiphum*'s influence on Thai intellectual history up to the period of the twentieth century.[584] These two studies examine the importance of *Traiphum* in modern Thailand until the 1980s. I explore the activities further from the 1980s. The Thai government's departments have also made many attempts to revive the *Traiphum.* The Department of Fine Arts organized the revision of the *Traiphum* text in 1974; it was the first commission of the text that has been done since the 1787 revision of *Traiphum* under King Rama I's

---

[582] E-exhibition: Einstein, http://122.155.162.144/nsm2008/E-exhibition/Einstine_files/index.html, [accessed 30th May 2015].

[583] See P A. Jackson, 2002, 'Thai-Buddhist Identity: Debates on the Traiphum Phra Ruang', chapter 7, in Craig J. Reynolds (ed.), *National Identity and Its Defenders: Thailand Today*, Bangkok; C J. Reynolds, 2006, 'Buddhist Cosmography in Thai Intellectual History', chapter 8, *Seditious Histories: Contesting Thai and Southeast Asian Pasts*, University of Washington Press.

[584] C J. Reynolds.2002, p. 17

behest.[585] Since *Traiphum* is a complex text, reading it is not an easy task for the contemporary Thais. The revised version has added footnotes, an index, and a list of ancient vocabulary translations. Therefore, the text is now easier to read.

Another approach to drawing attention to *Traiphum* was the conference on *Traiphum*, organized by the Department of Fine Arts under governmental sponsorship in 1983. The conference was held to celebrate 700 years of the Thai scripts developed by the King Ramkhamheng, Lithai's grandfather. The conference proceedings were published as a popular book for sale on the market. Recently in June 2012, a seminar on '*Traiphum*: the influence on Thai society' was organized again by the Department of Fine Arts. The seminar was reported in almost every Thai newspaper, which is another effective way to promote the *Traiphum*. One of the most striking comments was made by Kullasap Ketmankit, one of the speakers who is the president of the National Literature Committee. Kullasap stated that it is unfortunate that *Traiphum* is disregarded by Thai especially by the younger generation; *Traiphum*, so she argued, teaches real democracy, the foundations of life, and to be afraid of doing evil deeds, which is something Thais should learn.[586] She also added that *Traiphum* had been selected to be translated to English to join the Asian literature project, which aims to promote and share Asia's outstanding works of literature. *Traiphum* was selected because it is regarded as the best text written in the Sukhothai period.

Another example is the government plan for building a new parliament building; the concept of the architecture is based on cosmological concepts of the cosmos in

---

[585] Jackson, p. 168.
[586] Komchaluek newspaper, online version, 29 June 2012. http://www.komchadluek.net/detail/20120705/134383/%E0%B9%80%E0%B8%AA%E0%B8%B5%E0%B8%A2%E0%B8%94%E0%B8%B2%E0%B8%A2...%E0%B9%84%E0%B8%95%E0%B8%A3%E0%B8%A0%E0%B8%B9%E0%B8%A1%E0%B8%B4.html#.URhJk_IXKSp

Traiphum. The golden stupa which will be the house of Siam Thevarat is the highlight of the new parliament site. The stupa represents Mount Sumeru which is the centre of the earth according to *Traiphum*. The architect who designed the plan stated that the concept of Traiphum was applied to represent the idea that the Dhamma can cure political crisis.[587] The construction concept approved by Samak Sundaravej (PM) and the cabinet in 2008, was criticised for its concept. Chatri Prakitnontakarn, architecture lecturer from Sillapakorn University, commented that a modern society should separate the state from religion. According to him, using the concept of *Traiphum* as an architectural feature of the new parliament building represents a hierarchically structured society rather than democratic values. He added that the architect focused on Thai identity more than utility, which he does not agree with.[588] Thongchai criticized the parliament building plan as an attempt to symbolically transform modern parliament into a traditional Buddhist temple and promote the concept of royal-nationalism.[589] The royal-nationalism is a concept Thongchai fruitfully argues in his works; he criticises the royal-nationalism for underlying the Thai historical culture that does not promote the correct fact but a comforting fact.[590] These examples strongly demonstrate the Thai nationalism.

---

[587] The Prachachat newspaper, 3 December 2009 http://www.prachachat.net/view_news.php?newsid=02rea01031252&sectionid=0217&day=2009-12-03, accessed 6 June 2014

[588] New parliament, old-fashioned meaning. Interview with Chatri Prakitnontakarn. The Prachathai website, file:///D:/media%20Triphum/new%20parliament.htm, accessed 2 May 2012

[589] http://prachatai.com/journal/2010/08/30655, accessed 12 September 2011

[590] See for example Thongchai Winichakul. "Thai History: The Royal-nationalism." *Art & Culture*, November 1, 23, 56-65.

6.5 Discussion

The examination of the government's main organizations taking responsibility of science communication shows that the government has its own approach of indigenizing science by engaging the nationalism and kingship. The approach is different to the approach that the middle-class expresses strong interest in which is the Science-Buddhism dialogue.

My main finding is the government has undertaken the practice of indigenization as well as the middle-class. However, the focal point of the government's indigenization is to create 'wittayasat Thai (Thai science)' by employing the nationalism and the honouring of the monarchs. The indigenization contains two key practices: establishing the concept of 'Thai science' or another term used is 'Thai scientific wisdom (phumpanya Thai choeng wittayasat)', and promoting the prominent role of the monarchs in science. It is clear that the themes that the government has employed in indigenizing Western science are two features in the nation's three pillars: Nation, Religion and Kingship.

It is important to note that the definition of 'Thai science' the government attempted to create seems unclear. There is an ambiguous meaning of the definition of 'Thai science' in the books recommendation projects' criteria. Perhaps, creating the 'Thai science' can be viewed as the attempt to distinguish science concept from Western science. As mentioned in Chapter 2, the practice of adding the term 'Thai' to anything is a common practice by Thai government and Thai individual, as discussed by Streckfuss.[591]

[591] Streckfuss. 2010.

The government's indigenization of science can be seen in the practice of praising King Mongkut (r.1851-1868) to be the 'father of Thai science' in 1982 when at that time the government initiated the 'science day'. Moreover, the current King Bhumibol Adulyadej was honoured as 'the father of technology' in 2006. The NSM's exhibition on its fifth floor devoted to phumpanya Thai (Thai local wisdom) is clearly an evidence of the government's practice in engaging the monarch – in this case the Queen's projects in the indigenization of science. The other practices by the government's organizations i.e. the NSTDA's TV programs and the TRF funded books recommendation projects demonstrate the government's approach of building 'Thai science'.

It is noted that the government did not completely ignore the significant interest of the middle class towards Einstein and the Science-Buddhism dialogue as shown in the government's publishing of the popular books on Einstein, the online exhibition on Einstein, the books recommendation projects listed five books the Science-Buddhism dialogue to be 'Neungsue dee wittayasat (good science books). However, the contemporary government focuses on creating 'Thai science', more importantly, it does not place Buddhism as the focal point in the creation of 'Thai science'.

The disparities in the focuses in science between the government and its target, the middle-class, have created tensions in the science communication landscape on two levels. First, as mentioned previously, the government focuses on the economical science while the middle-class expresses significant interest in contemplative science. Secondly, there is disparity in the practices of indigenizing western science. While the government focuses at engaging nationalism and the monarch in creating 'Thai science', the middle-class demonstrates the significant interest in the indigenization of Einstein

and the Science-Buddhism dialogue to prove that Buddhism is superior to science. The dialogue could have offered the middle-class some comfort. The disparities could have been one of the challenges that the government is facing in science communication.

Chapter 7: Conclusion

This thesis explores the key characteristics of science communication in Thailand, drawing on a significant number of popular books, newspapers, science museum exhibitions and the Pantip online discussion forum. It is widely accepted that understanding the specific cultural context is key to achieving successful science communication. So my aim has been to understand historical and socio-cultural contexts in Thai society in connection with the science communication policy and practices operated mainly by the policy makers and scientists who work for Thai governments. The aim of this study is to identify the challenges of science communication in Thailand. Therefore, I investigate both players in the science communication practice, the Thai government as the sender and the middle-class who is the target audience of the practice. To achieve my aims I addressed three main questions as follows: What are the key characteristics of science communication in Thailand? What are the challenges to enhancing science communication in Thailand? And What is the focus of the government's science policies and practices?

7.1 The key characteristics of science communication in Thailand.

These are the key characteristics of science communication in Thailand that my research suggests:

7.1.1 The vital role of Buddhism in Siam/ Thailand

The Thai Buddhist tradition has been engaged in discourse with Western science since the royal elites welcomed it into the country in the mid-19th century. The role of Buddhism is closely connected with the significant role of the elites since they used

Buddhism in the period of the Western colonialism as a tool in the Science-Buddhism discourse to demonstrate the country's indigenous values. The role of Buddhism in science discourse remains nowadays evident in popular books, but has been moulded by two challenges that Thai Buddhists had to face: Western imperialism and Christianity. The first led to the partial Westernization of Thailand and the second to challenges against their system of knowledge and belief based on the *Traiphum*.[592] The challenge of Christianity prompted the Siamese elites to revise and reinterpret their Buddhist tradition as instanced in arguments of the then Minister of Defence, Thippakorawong, whose *Kitchanukit* of 1867 produced by hand lithograph, was the starting point of the long dialogue between science and Buddhism in popular books in Thailand.[593] While the subsequent debate between science and Buddhism took place in newspapers and books – represented in the Western world as 'mass' media - the engagement in Thailand was initially restricted to the elites, so their readership was numerically very small – and remained so until the late twentieth century.

After *Kitchanukit* was published in 1867, there was no book on the Science-Buddhism dialogue on the Thai market until the mid- 20th century. This could be explained by the population mostly having low access to education and thus low literacy. In the 1950s, the Science-Buddhism dialogue reappeared in popular books in response to the period of Cold War when the United States of America played a major role in Thailand in many aspects. Most significantly, for my purposes, the USA promoted its culture through translation projects on its popular science books. Yet as a counter-

---

[592] '*Kan Sangson Wicha Yang Prathet Yu-rop* [European education system]', The Bangkok Recorder: 19th October 1865.

[593] Thippakornrawong, p. 1.

reaction, popular books on the dialogue between science and Buddhism proliferated in Thailand – recapitulating how – as with *Kitchanukit* (1867) – the Buddhist interest in science grew in response to Western interventions.

After the Cold War, the period of 1990s-2000s was yet another period during which this theme thrived as the fear of 'globalization' rose, in particular when the Asian Financial Crisis of 1997 alarmed many Thai about the recurrent threat of American capitalism. Again, a relatively significant number of popular books claimed that Buddhism was a rational religion that is superior to Western science. This literature challenged the Western ideas by demonstrating that Thailand had its own precious Buddhism, perceived as better able than science to apprehend the truth, comparable in status to science, thus serving to reaffirm the traditional values of Thai Buddhism. The Science-Buddhism dialogue has a strong sense of the Thai identity; one of the major purposes of the dialogue is to demonstrate the superiority of Buddhism.

My examination shows that the core themes in the Science-Buddhism dialogue have tended to remain the same since the 1860s when *Kitchanukit* was first published, through to the current day, although a new theme of indigenizing Einstein emerged in the 1990s. However, the new theme does not replace the earlier core themes but instead adds an extra dimension of complexity to them. These remaining key themes are the bifurcation of mind and material, Karma, and Kalama sutta, as discussed in Chapter 3.

The standard account of the Science-Buddhism dialogue highlights the similarities between scientific knowledge and the Buddhist teachings. Some authors have observed strong similarities between science and Buddhism as 'Buddhism is

science'. Despite the similarities demonstrated, according to the authors of the dialogue, Buddhism is superior to science since it has revealed scientific knowledge more than 2000 years earlier than science.

I have argued that in the 1990s, a new key theme in the Science-Buddhism dialogue emerged - the indigenization of Einstein. The significant interest in this theme is evidently demonstrated in the phenomenal sale of *Einstein Phop Phraphuttachao Hen*.

On the one hand, the significance of Buddhism as well as the Science-Buddhism dialogue remains in the Thai society. On the other hand, the party playing the main role in the dialogue has changed over time. In contemporary Thailand, the middle-class expressed a significant interest in the science-Buddhism dialogue; as I have shown, however, the Thai government has demonstrated very little attempt to engage Buddhism with science. It has rather made the attempt to endorse nationalism and honour monarchs in the encounter with Western science to establish 'Thai science'.

7.1.2 The significant interest in Einstein expressed by the middle-class public.

Einstein is no doubt a world celebrity scientist, but this high profile has been revealed by some scholars as significantly constructed by the American press. My survey in Chapter 4 shows that Einstein is the most well-known international scientist in Thailand, as determined by comparative analysis between popular accounts of Einstein's life and other international scientists' lives.

Einstein's fame in Thailand seems to have its focus on lighter issues. My investigation of his popular literature shows that the majority of the popular books regarding him concentrate on his biography, and quotations. Only a few books

concentrate on explaining his theories. It could be said that the Thai popular account of Einstein shows attempts at iconizing rather than engaging him. In comparison to Einstein's fame become established in the US, Missner reveals that the American media focused on the dissemination of his theories and this does not seem to be the case in Thailand.[594]

As Chapter 4 presents, Einstein's fame needs to be understood within the context of his universal fame. However, the Thai popular account of Einstein tends to contain the strong element of the interest in his connection to Buddhism. It is evidenced by the practice of indigenizing him appearing in many popular books, by applying the Buddhist's concepts in portraying his characteristics and his works. I argue here by drawing on my interpretation that one of the main factors that have made him the most well-known scientist in Thailand is the indigenization practice that has been undertaken on his biography and work.

As Chapter 3 suggests, Einstein and his theories are the major themes in the Science-Buddhism dialogue after the 1990s, as seen in the way that his name is on the titles of popular books regarding science and Buddhism. It seems that the relationship of science and Buddhism in popular books has shifted to focusing on the contemplative aspects of the Einstein-Buddhism relationship. I emphasise that the theme is the indigenization of Einstein, his theories and more importantly Einstein's quotes regarding Buddhism were adapted by authors who claim that they were said by Einstein, to serve the purpose of demonstrating Buddhism's superiority. Often underlying the attempts is

[594] Missner, 1985.

a strong feeling of Thai nationalism that can also be identified (see Chapter 5). The process of indigenizing Einstein begins with the practice of developing the perception that Buddhism and Einstein/ theories are compatible; the next step is to establish Buddhism's superiority to science. I suggest that *Einstein Phop Phaphuttachao Hen* was a success in sales because it focused on the indigenization of Einstein in many aspects. However, some of the claims present in the book attempt to demonstrate that Buddhism discovered, earlier, what science was catching up to in modern times. The authors were criticised with critics claiming that they had simplified the scientific content to match the specific Buddhist teachings.

There seems to be concern by some scientists on the low level of intellectual debate of the indigenization of Einstein discourse. The concern is expressed mainly in the Pantip online forum and some web blogs, which later influenced some newspapers to cover the issue. More importantly, the indigenization of Einstein by distorting his genuine quotations and some of the claims regarding Einstein being Buddhist are insubstantial as the authors attempted to gain credibility by referring to the sources of these quotations, although such sources do not contain the alleged quotations.

The major theme in indigenizing Einstein has remained almost the same since the famous scholar monk, Phra Payutto gave the lecture on 'Buddhism as the foundation of science' in late twentieth century. Afterwards Chaiyapuek Penwijit possibly inspired by Phra Payutto's lecture, first presented the alleged quotation in his book in 1996.[595] The dissemination of the alleged quotation has been continuing since, despite the lack of a genuine source of the quotation. However, it seems that to some of the authors of

[595] C. Penwichit. 1996.

the genre, the fact that the quotation is without genuine source is insignificant, hence they referred to the sources without checking. Perhaps to some measure, the question as to whether the quotation actually comes from Einstein is given considerable less importance than their arguments of the superiority of Buddhism.[596]

7.2 The challenges of science-communication in Thailand

The aforementioned key characteristics of science communication in Thailand now feature at the heart of challenges for the Thai government's attempt to communicate science to the public. The differences in foci between these two parties are inherent in the inevitable tension in science communication. The disparities contain two layers creating difficult challenges. First, the disparity of interest in science. The Thai government's focus regarding science is coherent with any country's government aiming at its nation's competitiveness and science for economy. The second layer, my finding that both the Thai government and the Thai middle-class have indigenized science. However, the government has focused on deploying the concept of 'Thainess (khwam pen Thai)' and the 'monarchs' to construct the identity of 'Thai science (witthayasat Thai)'. The Thai government tries to promote the roles of specific Thai monarchs and members of the royal family in science and technology; it also praises Thai scientists by appointing a number of prizes/ awards, such as the 'Thai outstanding scientist awards'. By contrast, the highlighted theme of the middle-class is the indigenization of a particular Western scientist, Einstein. It can be seen that the Thai government focuses on indigenizing Western science but not individual Western scientists.

[596] Streckfuss, p.249 discusses a similar discourse with the notion 'defamation thinking' which 'has a tendency not to at the truth of the matter'; he identifies the 'defamation thinking' as an important feature in what he calls 'defamation regime'.

It is important to note that the government's practice in indigenizing Western science by engaging nationalism and monarchs could have been a result of following the suggestions from Hongladarom's recommendations. Hongladarom's recommendations suggest that 'science and technology should grow from indigenous sources in order to be beneficial to the people'.[597] Hongladarom is a philosophy scholar who had conducted a few studies on science communication in Thailand supported by the TRF, focusing on finding some solutions for the government to overcome the challenges in communicating science.[598] One of his main recommendations for the government to overcome the challenges is, as Hongladarom states, 'to integrate Buddhism more tightly with science'.[599] However, Hongladarom mentions the work by Goonatilake and Kirthisinghe without acknowledging the middle-class's strong interest in the Science-Buddhism dialogue in Thai landscape.[600] Here, my thesis puts forward a concrete idea that there is a strong interest in bringing Buddhism close to science, the government could acknowledge and react appropriately to the interest.

Although the government has its own way of indigenizing science, however, it has partially recognized the significant role of Buddhism and the indigenization of Einstein that the middle-class applied to interact with science. Its book recommendation projects are the significant evidences of the practice. However, one major concern, as

---

[597] S. Hongladarom, 2004 'Growing Science in Thai Soil : Culture and Development of Scientific and Technological Capabilities in Thailand', *Science, Technology & Society, vol.9 no.1*, p. 67.
[598] S. Hongladarom, 1998, *The Crisis of Science Education in Thailand*, Bangkok, The National Science and Technology Development Agency; S. Hongladarom, 2002, *Science in Thai culture and society*, Bangkok, The institute of academic Development.
[599] ibid
[600] Susantha Goonatilake, 1998, *Toward Global Science: Mining Civilizational Knowledge*, Bloomington, Bloomington, IN: Indiana University Press. Buddhadasa P. Kirthisinghe, 1984, *Buddhism and Science*. Delhi, Motilal.

demonstrated in my study, is the way that the NSM, one of the government's main organizations, has depicted Einstein with regard to this quotation.

My finding on the disparities of foci in their engagements with science between the government as the communicator and the middle-class as the target audience, raises an important question whether the government as the communicator is aware of the target audience's nature and interests. As mentioned, I interpret that the government has partially acknowledged the middle-class's actual interests in the contemplative science. However, my research suggests that the government has been applying the deficit model in its science communication as it seems to select what they regard as most important in the practice. As Miller argues, the process of science communication is different from the process of Public Understanding of Science focusing on deficit model, 'the communicator need to be much more aware of the nature and existing knowledge of the intended audience'.[601] It is understandable that the government has rather remained secular in its approach to science communication which suggests that the Thai government is following the Western model.

Moreover, the practice of keeping Buddhism separated from modern science has long been conducted since the nineteenth century in order to keep its value.[602] Another possibility that the government would rather not engage Buddhism in its indigenization of science is that nowadays, scientific findings/theories are more complicated than in the nineteenth century when King Mongkut participated in the Science-Buddhism dialogue, as well as Buddhism, a religion which is older than two millennia now, is

[601]S. Miller, 2001, 'Public understanding of science at the crossroads'**.** *Public Understanding of Science* January 1, 10, pp. 115-120.
[602] D. Pueksom. 1998.

arguably rich, difficult, and challenging for interpretations. Its main scripture, the *Tipitika* (Pali canon), is quite large and contains forty-five volumes. Both science and Buddhism require an in-depth study in order to thoroughly grasp it. Therefore, it is rather rare for an individual to be knowledgeable in both areas like the outstandingly well-read and intelligent scholars, King Mongkut, Thippakorawong and Phra Payutto to be able to engage deeply and competently in the dialogue.

7.3 The suggestions derived from my research:

7.3.1 The need to address the middle-class's interest.

Perhaps the comforting feeling that the indigenization of Einstein (particularly the alleged quotation) offers, has encouraged the media to create more myths about Einstein. There are myths that even the Thai science museum's exhibition has fallen for. What could be learnt from the indigenization of Einstein in the popular accounts is that the dialogue could be nurtured by the government. The Thai government, particularly the scientific organizations, could address the interest in the dialogue of science and Buddhism to build a shared agenda in Thai society. To foster such discourse, the government could encourage the two parties, scientists and Buddhist scholars, to join this discourse. In addition, the government could offer research grants for the field since, as my research shows, there are very few scientists who take part in the dialogue of science and Buddhism. The only major exceptions are two prominent Thai Buddhist scholars, Buddhadasa Bhikku and Phra Payutto who have convincingly and competently written on the science and Buddhism relationship. The Thai government could take the Mind and Life Institute as an example; a Tibetan Buddhist organization has attempted

to develop a scientific understanding of the mind by establishing this institute.[603] This institute has regularly held international symposia for contemplative studies in Europe and America, and offered research grants and awards in this field.[604]

To open a wider arena for the Science-Buddhism dialogue and encourage a more intellectual debate, the government could cultivate the dialogue either as an academic account or popular account. For example, the government could establish awards for researchers, academic, and popular authors to acknowledge their contribution to this dialogue. The award for the dialogue of science and Buddhism can be established similarly to the annual Prince Mahidol award inaugurated by the present King of Thailand for outstanding Thai contributions to science. In addition, the government has already established its independent 'outstanding scientist award' honouring Thai scientists who had made outstanding scientific research as discussed. The Templeton Prize is an example of an award that honours a living person who 'has made an outstanding contribution to affirming life's spiritual dimension' which the Thai government could take as a model.[605] By fostering the dialogue of science and Buddhism in this way, the Thai government could encourage more serious discussions in the Science-Buddhism dialogue.

By suggesting scientists' involvement in the Science-Buddhism dialogue, I am aware that it could be considered as risky as it is the case in the UK when scientists have joined the dialogue; their interventions arguably have often been aggressive and only serve to alienate the public from science. However, for the case of Thailand, with ninety-

---

[603] Mind and Life Institute. http://www.mindandlife.org/about/history/, accessed 23 Jan 2014

[604] Ibid.

[605] Templeton foundation, http://www.templetonprize.org/abouttheprize.html, accessed 23 Jan 2014

five percent of the population being Buddhists, Buddhism is an integral part of Thai identity and cultural life. Moreover, I found that Thai scientists are unlikely to oppose the Science-Buddhism dialogue; some of them even appreciate the discourse if it were done on a more serious and academically convincing level.[606]

7.3.2 Bringing scientists closer to the public.

The promotion of the government's theme to promote outstanding scientists could to a certain extent become a challenge of engaging the public with science, in particular the government's aim to encourage more youth to take up scientific careers. My examination shows that the popular account contains a significant portrayal of science being distinguish and to some extent could be perceived as elite. The evidences are the newspapers' coverage of the special events regarding science, for instance, the Nobel Prize, the Prince Mahidol award, the Outstanding Scientists Award and the Olympia candidates, were reported regularly and vibrantly in the daily news, along with the elevation of Einstein as an icon to some extent and in some aspects comparable to the historical Buddha.

Moreover, I suggest, the government practices of praising the roles of monarchs in science may have had a deterrent effect on the public attitude towards scientists, especially to the idea of joining their number. These depictions of scientists as geniuses may have made science seem inaccessible as a career to ordinary people. This would explain the major survey results on the public's attitude to science conducted by the NSTDA, confirming that while Thai people have positive attitude towards it, they want neither themselves nor their children to become scientists. In addition, they believe

[606] Tanaboonsombat, interviewed by Chinnalong, 2010.

science is scientists' responsibility, not for them as the Thai public to take a stake in. These public perspectives could be a consequence of consuming the portrayal of outstanding scientists from the media. My suggestion is the depictions of scientists as ordinary people who are interested in science, could be created, as well as the projects to encourage outstanding scientists. Revealing scientists' lives and their jobs in researching should fill the gap and make the public familiar with scientists' jobs. Moreover, scientists could initiate and get involved in public outreach projects e.g. writing popular science books and giving public lectures. A face-to-face communication between scientists and the public is another way of portraying scientist as ordinary human beings.

My dissertation is certainly conducted within inevitable limitations. First, the constraint of time allowance for PhD study is one of the most significant limits as a consequence of which my research could only focus on the Bangkok middle-class, although my examination of the Pantip online forum may have broken the demographic barrier of the middle-class living in Bangkok to some extent, as very many Thai people outside Bangkok could have participated in these discussions. Further study could be done on investigating the science-related interest of the people who live in the countryside or the people in other classes e.g. working class or peasants. Moreover, as my thesis focuses on the popular account of the Science-Buddhism dialogue, I hope the next step would be to conduct research focusing on intellectual discussions and debates e.g. those taking place in Buddhist journals. It would be interesting to investigate what Buddhist monks think about the Science-Buddhism dialogue. Another major limitation effecting my research is the constraint of the Thai media archive, especially newspapers. As a consequence, my examination of Einstein account and the Science-Buddhism

account in newspapers could not extend further than the 1997 according to the archive availability. In the future, when the digital archive grows, research could be conducted which could yield a richer study.

Bibliography

Alabaster, Henry (1870) *The Modern Buddhist: Being the Views of a Siamese Minister of State on His Own and Other Religions*, London: Trübner.

Albert Einstein, Bookon Hang Sattawat [Albert Einstein: Person of the Century]. *Matichon* (27 December 1999), p. 1 and 20.

'Anakhot Einstein nae phuean: prot khit sak nit kon chik sap sin thang panya [Future Einstein suggests: be considerate before infringing on patent] ', *Matichon*, (15 March 2005), p. 25.

Anonymous (1865) 'Kan Sangson Wicha Yang Prathet Yu-Rop [European Education System]' *The Bangkok Recorder,* 19th October 1865.

Anumanratchaton, (Phraya) (1989) *Ng-an Nipon Chud Sombon Khong Praya Anumanratchaton [The Complete Work of Phraya Anumanratchaton: Biology and Zoology]*, Bangkok: Department of Fine Arts.

Apapirom, Anuch (1998) *Nippan Nai Sattawat Ti Yisip [Nirvana in 20th Century]*, Bangkok: Matichon Publishing.

Aphornsuvan, Thanet (2009) 'The West and Siam's Quest for Modernity: Siamese Responses to Nineteenth Century American Missionaries,' *South East Asia Research*, vol. 17 November.

Aron, Arthur and Aron, Elaine N. (2002) *Statistics for the Behavioral and Social Sciences: A Brief Course*, (2nd ed.), Upper Saddle River, NJ: Prentice Hall.

Assavavirulhakam, Prapod (2010) *The Ascendancy of Therāvada Buddhism in Southeast Asia,* Chiang Mai Thailand: Silkworm Books.

Atkins, William (2002) *The Politics of Southeast Asia's New Media,* London: Routledge Curzon.

Baker, Christopher John and Pasuk, Phongpaichit (2005) *A History of Thailand,* Cambridge: Cambridge University Press.

Bamber, Scott (1998) 'Medicine, Food, and Poison in Traditional Thai Healing', *Osiris, Beyond Joseph Needham: Science, Technology, and Medicine in East and Southeast Asia*, Vol. 13.

Baker, J.O., (2012) Public perceptions of incompatibility between 'science and religion', *Public Understanding of Science*, 21(3), pp.340–353.

Ban Witthayasart Club (2003) *Albert Einstein Chao Khong Thitsadee Sampattapap [Albert Einstein: The Relativity Theory's owner]*, Bangkok: Ban Witthayasart.

Baptist, Egerton C. (1982) Ratkanok, Tin (trans.) *Praputtasatsana Kap Wittayasat (Supreme Science of the Buddha)*, Chaing Mai: Wat phan tong.

Barm, Scot (1993) *Luang Wichit Wathakan and the Creation of a Thai Identity, Social Issues in Southeast Asia*, Singapore: Institute of Southeast Asian Studies.

_____ (2002) *Woman, Man, Bangkok: Love, Sex, and Popular Culture in Thailand*, Oxford: Rowman & Littlefield.

Barnett, Lincoln (1970) Ratchatanawin, Arun Ekkapop (trans.) *Lae Doctor Einstein (the Universe and Dr. Einstein),* Bangkok: The national research councils.

Bauer, Martin W. and Bucchi, Massimiano (2007) *Journalism, Science and Society: Science Communication between News and Public Relations,* New York: Routledge.

Bauer, Martin W., Allum, Nick and Miller, Steve (2007) 'What Can We Learn from 25 Years of PUS Survey Research? Liberating and Expanding the Agenda' *Public Understanding of Science,* vol. 16, 179-95.

Bawon, Sak (2002) *Albert Einstein Nai Thatsana Phong Phuean (Albert Einstein: From Friends Views),* Bangkok: Smit Publishing.

_____ (2004) *Aisatai kap Phuttha: pratchaya khukhanan thi banchop phopkan [Einstein and Buddhism: the Convergent Parallel]* . Nonthaburi: Samnakphim Samit.

Bechert, Heinz and Glasenapp, Helmuth von (1966) *Buddhism--a Non-Theistic Religion; with a Selection from Buddhist Scriptures,* New York: G. Braziller.

Benedict, Anderson R. O'G. (1998) *The Spectre of Comparisons: Nationalism, Southeast Asia and the World,* London: Verso.

Bing, L., (2006). Some Historical Analysis of the Translating, Editing, and Publishing Process of the Collection of Albert Einstein in China' *Synthesis Philosophica*. 42, 02(091).

Bodanis, David (2005) Leemakadej, Anat (Trans.) *Chewaprawat Kong Samakan Satan Lok (E=Mc2: A Biography of the World's Most Famous Equation)*, Bangkok: Pinnacle Advertising.

Bogart, Leo and Bogart, Agnes (1976) *Premises for Propaganda: The United States Information Agency's Operating Assumptions in the Cold War*, New York: Free Press.

Bonnak, Yod (1972) *Thamma Kiao Khong Kap Wittayasat Yang Rai [What Is the Connection between Buddhism and Science?],* Bangkok: Apidhrama Foundation.

Bowler, Peter J. (2009) *Science for All: The Popularization of Science in Early Twentieth-Century* Chicago: University of Chicago Press.

Bradley, William L. (1966) 'Prince Mongkut and Jesse Caswell', *Journal of the Siam society*, vol. 54.

Bradley, William Lee (1981) *Siam Then: The Foreign Colony in Bangkok before and after Anna,* Pasadena, Calif.: William Carey Library.

Brock, Colin and Symaco, Lorraine (2011) *Education in South-East Asia*, Oxford Studies in Comparative Education, vol. 21, Oxford: Symposium Books.

Broks, Peter (2006) *Understanding Popular Science, Issues in Cultural and Media Studies*, Maidenhead: Open University Press.

Brooke, John Hedley (1991) *Science and Religion: Some Historical Perspectives*, Cambridge: Cambridge University Press.

'Buanglang rangwan rian Einstein: phonngan thi uea tho kasettrakon thang lok [Behind the Einstein Medal]', *Krungthepturakit* (14 November 2003), p. 8.

Bucchi, Massimiano (1998) *Science and the Media: Alternative Routes in Scientific Communication,* London: Routledge.

Bucchi, Massimiano and Trench, Brian (2008) *Handbook of Public Communication of Science and Technology*, London: Routledge.

Buddhadasa (1991) *Thamma Khue Wittayasat [Buddhism Is Science],* Bangkok: Suan usama Foundation.

'Buncha Tanaboonsombat's Perspective ', *Krungthepturakit*, (3 August 2008), pp. 11-12.

Bunpan, Panbua and Kongmuang, Prayong (2005) *Raengbandanchai Chak Albert Einstein (Einstein: My Inspiration)*, Bangkok: Matichon Publishing.

Bunthuean, Kanda (2008) '*Einstein Phop Phraphutthachao Hen [Einstein Found the Buddha had seen]*', *Krungthepturakit*, 23 March, p. 10.

Burawat, Samak (2001) *Puttapratya: Mong Puttasartsana Duaw Tassana Wittayasart (Buddhism Philosophy: Viewing Buddhism through Science Vision),* Bangkok: Sayam Publishing.

_____ (1970) *Wittayasat Mai Lae Prasri-an [New Science and Buddha Maitreya],* Bangkok: Prae pittaya.

Cantor, G. N. (2004) 'Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature*', Cambridge Studies in Nineteenth-Century Literature and Culture*, (Cambridge: Cambridge University Press, 2004) vol. 45.

'Cern Koenphop Anuphak reo kwa Saeng: Phlikchom Thitsadi dang Einstein [Cern Discovered a Particle Travels Faster than Light]', *Matichon*, (24 September 2011), p. 30.

Chadkaew, Saowanee (1998) 'The Presentation of Western Innovation in the Missionaries' Newspapers during the Reign of King Rama iii to King Rmama V', M.A. thesis, Chulalongkorn University.

Chaichanasan, Krongpaen (1999) *Chewaprawat Albert Einstein [Albert Einstein Biography]*, Bangkok: Delfi.

Chalmers, A. F. (1999) *What Is This Thing Called Science?,* (3rd ed.), Buckingham: Open University Press.

Chalo, U-tukkapad and Phutthasatsana, Wichai (1969) *Priapthiap Kap Lak Wittayasat (Buddhist Philosophy as Compared to the Law of Physics),* Bangkok: Praepittaya.

Charoensin, Aumnat (2002) *Wittayasat Kap Satsana (Science and Buddhism),* Bangkok: Rueng saeng Publication.

'Chintanakan khwammungman lae Einstein', *Krungthepturakit*, (10 March 2005), p. 5.

Chittenden, David, Farmelo, Graham and Lewenstein, Bruce V. (2004) *Creating Connections: Museums and the Public Understanding of Current Research*, Oxford: AltaMira Press.

'Chiwit phissawong khong Einstein [Einstein's Amazing Life]', *Matichon*, (30 September 2005), p. 22.

Clement Van Pelt, J. (2005), 'Review Discussion the Essential David Bohm', *Sophia*, Vol.44, No. 1, p.130

Club, Ban Witthayasart (2003) *Albert Einstein Chao Khong Thitsadi Samphattapap [Albert Einstein: The Relativity Theory's Owner]*, Bangkok: Ban Witthayasart Club Collaborator.

Conze, Edward (1959) *Buddhist Scriptures,* Harmondsworth: Penguin.

Conze, Edward and Lancaster, Lewis R. (1982) *Buddhist Scriptures: A Bibliography*, New York: Garland Pub.

Cook, Nerida (2002) 'Thai Identity in the Astrological Tradition', in *National Identity and Its Defenders: Thailand Today,* Reynolds, Craig J. (ed.) Chiang Mai: Silkworm.

Cull, Nicholas John (2008) *The Cold War and the United States Information Agency: American Propaganda and Public Diplomacy, 1945-1989* Cambridge: Cambridge University Press.

Cushman, Richard D. and Wyatt, David K. (2000) *The Royal Chronicles of Ayutthaya*, Bangkok: Siam Society.

D'Inverno, R. A. (1992) *Introducing Einstein's Relativity,* Oxford: Clarendon Press.

Dalai Lama (2007) Pongcharoensuk, Petcharat (Trans.) *Chakkawan Nai Nueng Atom: Kan Lom Ruam Wittayasat Kap Chitwinyan (The Universe in a Single Atom: The Convergence of Science and Spirituality),* Bangkok: Suan ngoen mi ma Publishing.

Davies, Sarah R., Mellor, Felicity and Bell, Alice R. (ed.) (2008) *Science and Its Publics,* Newcastle: Cambridge Scholars Publishing.

Day, Tony and Reynolds, Craig J. (2000) 'Cosmologies, Truth Regimes and the States in South-East Asia', *Modern Asia Studies*, vol.34.

Dixon, Thomas, (2008) *Science and Religion: A Very Short Introduction,* Oxford: Oxford University Press.

Dixon, Thomas, Cantor, G. N. and Pumfrey, Stephen (2010) *Science and Religion: New Historical Perspectives,* Cambridge: Cambridge University Press.

Dizard, Wilson P. (1961) *The Strategy of Truth: The Story of the U.S. Information Service,* Washington: Public Affairs Press.

Doem Bang Boriban, Luang (1971) *Laktam Tang Putthasatsana Priap Thissadi Tang Wittayasat [the Comparison between Buddhism Doctrine and Scientific Theory],* Bangkok: Srisattawat Printing.

Dukas, Helen and Hoffmann, Banesh (ed.) (1986) *Albert Einstein, the Human Side: New Glimpses from His Archives,* Princeton: Princeton University press.

Dunwoody, Sharon (2008) 'Science Journalism', in *Handbook of Public Communication of Science and Technology,* Bucchi, Massimiano and Trench, Brian (ed.) London: Routledge.

Durant, J. R. (1989) 'The Public Understanding of Science', *Nature,* Vol. 340.

Durant, John H. (1992) *Museums and the Public Understanding of Science,* London: Science Museum in association with the Committee on the Public Understanding of Science.

Eger, Joseph (2007) Tunrattanakul, Chittraporn (Trans.) *Violin Kong Einstein (Einsteins Violin),* Bangkok: Matichon Publishing.

Einstein, Albert (1981) Kumpon Sritanom (Trans.) *Khian Wai Muea Pen Mai Klai Fang: Thassana Wa Duai Sangkom Lae Kanmueang (Out of My Later Years Albert Einstein: Einsteins View of Life Society and Politic),* Bangkok: Ton mak Publishing.

Einstein, Albert (2004) Teeron Matchima (Trans.) *Lok Nai Thatsana Khong Khapachao (My View towards the World)*, Bangkok: Khum kham Publishing.

'Einstein', *Thairath*, (6 May 2009), p. 7.

'Einstein noi yuean ban Achimo [Little Einstein Visit Achimo's Home]', *Matichon*, (9 December 2007), p. 24.

'Einstein Phop Phraphutthachao Hen Khwamching ti Chomduean Satawut Hen [Einstein Phop Phraphutthachao Hen from Chomduean Satawut's View', *Krungthepturakit*, (27 October 2008), p. 33.

'Einstein sat+sin thurakit phleng matching [Einstein Science and Art on music Business]', *Krungthepturakit*, (27 October 2009), p. 32.

'Einstein song miti: yot nak khit VS yot nak don tri [Tow Dimensions of Einstein]', *Krungthepturakit*, (27 August 2005), p. 10.

Elder, Robert Ellsworth (1968) *The Information Machine: The United States Information Agency and American Foreign Policy,* Syracuse, N.Y.: Syracuse University Press.

Ellegard, Alvar (1990) *Darwin and the General Reader: The Reception of Darwin's Theory of Evolution in the British Periodical Press, 1859-1872,* Chicago: University of Chicago Press.

Elman, Benjamin A. (2005) *On Their Own Terms: Science in China, 1550-1900,* London: Harvard University Press.

Elton, L., (1986). 'Einstein, General Relativity, and the German Press', 1919-1920. *Isis*, 77(1), pp.95–103.

Englehart, Neil A. (2001) *Culture and Power in Traditional Siamese Government,* Southeast Asia Program Series, no 18, Ithaca, N.Y.: Cornell University.

_____ (2003) 'Democracy and the Thai Middle Class: Globalization, Modernization, and Constitutional Change', *Asian Survey*, vol. 43.

Farrington, Anthony J., Tomlin, Karl Friedrich, Gutzlaff, August and others (2001) *Early Missionaries in Bangkok: The Journals of Tomlin, Gutzlaff and Abeel, 1828-1832*, Bangkok: White Lotus Press.

Ferngren, Gary B. (2002) *Science and Religion: A Historical Introduction,* Baltimore: Johns Hopkins University Press.

Fred Jerome (2005) Rojjana Nacharoen (Trans), *Faemlap FBI Lae Einstein (The Einstein File)*, Bangkok: Matichon Publishing.

Freeman, Gillian (1965) Chatburut, Apon (Trans), *Albert Einstein Tthe Story of Albert Einstein),* Bangkok: The national research councils.

Friedman, Alan J. and Donley, Carol C. (1985) *Einstein: As Myth and Muse,* Cambridge: Cambridge University Press.

Fyfe, Aileen (2004) *Science and Salvation: Evangelical Popular Science Publishing in Victorian Britain,* Chicago: University of Chicago Press.

Goldmann, Lucien., Trench, Brian and Wengraf, Tom (1974) *Power and Humanism, European Socialist Thought Series,* no 2 Nottingham: Spokesman Books.

Goldsmith, Mike (2005) Jones, Ploy (trans.) *Albert Einstein Kap Chakkawan Yued Hod (Albert Einstein and His Inflatable Universe)*, Bangkok: Nan mee books.

Gombrich, Richard F. and Obeyesekere, Gananath (1988) *Buddhism Transformed: Religious Change in Sri Lanka*, Princeton: Princeton University Press.

Gooday, Graeme J. N. and Low, Morris F. (1998) 'Technology Transfer and Cultural Exchange: Western Scientists and Engineers Encounter Late Tokugawa and Meiji Japan', *Osiris*, 2nd series, 13 (1998), 99-128.

Grant, Edward (2006) *Science and Religion, 400 B.C. To A.D. 1550: From Aristotle to Copernicus*, Baltimore: Johns Hopkins University Press.

Green, Suppawan P. (2006) *Einstein Tam Phraputtachao Top (Einstein Questioned Buddha Answered),* Bangkok: Free mind Publishing.

Gregory, Jane and Miller, Steve (1998) *Science in Public: Communication, Culture, and Credibility,* MA: Basic Books.

Gross, Alan G., Harmon, Joseph E. and Reidy, Michael S. (2002) *Communicating Science : The Scientific Article from the 17th Century to the Present,* Oxford: Oxford University Press.

Hammerstrom, Erik J. (2010) 'Buddhists Discuss Science in Modern China (1895-1949)', Ph.D thesis, Indiana University.

Harris, Ian Charles and Becket Institute (2007) *Buddhism, Power, and Political Order, Routledge Critical Studies in Buddhism,* London: Routledge.

Harrison, Peter (2006) 'Science' and 'Religion': Constructing the Boundaries', *Journal of Religion,* vol. 86 (January 2006).

Hathayatham, Aphiya (2005) *The Public Awareness of Science in Thailand: A Case Study on Biotechnology*, Australian National University.

Hawkings, Stephen (2009) Chadpum Attachad (Trans.) *Prawatyor Kong Kan Wala (a Brief History of Time)*, Bangkok: Matichon Publishing.

Hench, John B. (2010) *Books as Weapons: Propaganda, Publishing, and the Battle for Global Markets in the Era of World War II,* Ithaca, N.Y.: Cornell University Press.

Henry, John (1997) *The Scientific Revolution and the Origins of Modern Science, Studies in European History,* Basingstoke: Palgrave Macmillan.

_____ (2002) *The Scientific Revolution and the Origins of Modern Science, Studies in European History*, (2nd ed.), Basingstoke: Palgrave Macmillan.

_____ (2008) The Scientific Revolution and the Origins of Modern Science, Studies in European History, (3rd ed.), Basingstoke: Palgrave Macmillan.

Hodges, Ian (1998) 'Western Science in Siam; a Tale of Two Kings', *Osiris,* 2nd series, vol. 13

_____ (1999) 'Time in Transition: King Narai and the Luang Prasoet Chronicle of Ayutthaya', *Journal of Siam Society,* vol. 87.

Holliman, Richard (2009) *Practising Science Communication in the Information Age: Theorizing Professional Practices,* Oxford: Oxford University.

Holliman, Richard (2009) *Investigating Science Communication in the Information Age: Implications for Public Engagement and Popular Media*, Oxford: Oxford University Press.

Hongladarom, Soraj (1998) *The Crisis of Science Education in Thailand,* Bangkok: The National Science and technology development agency.

_____ (2002) *Wittayasart Nai Sangkomthai [Science in Thai Culture and Society],* Bangkok Chulalongkorn University press.

Hu, Danian (2005) *China and Albert Einstein: The Reception of the Physicist and His Theory in China, 1917-1979,* London: Harvard University Press.

Ieosiwong, Nithi., Baker, Christopher John., Anderson, Benedict R. O'G and others, *Pen and Sail : Literature and History in Early Bangkok, Including the History of Bangkok in the Chronicles of Ayutthaya*, Chiang Mai, Thailand: Silkworm Books.

Intrasuksri, Arunee (1964), *Educational Developments in Thailand, 1949-1963*, Bangkok: *Krasuang Su`ksathikan. Krom Wichakan.*

Irwin, Alan and Brian Wynne (1996) *Misunderstanding Science?: The Public Reconstruction of Science and Technology*, Cambridge: Cambridge University Press.

Jackson, Peter A. (1989) Buddhism, *Legitimation, and Conflict: The Political Functions of Urban Thai Buddhism, Social Issues in Southeast Asia,* Singapore: Institute of Southeast Asian Studies.

_____ (2002) Reynolds, Craig J. (ed.) 'Thai-Buddhist Identity: Debates on the Traiphum Phra Ruang' in *National Identity and Its Defenders: Thailand Today*, Chiang Mai, Thailand: Silkworm Books.

Jackson, Peter A. and Cook, Nerida M. (1999) Genders & Sexualities in Modern Thailand, Chiang Mai, Thailand: Silkworm Books.

Jackson, Rachel and Harrison, Peter A. (2010) *The Ambiguous Allure of the West: Traces of the Colonial in Thailand*, Ithaca, N.Y.: Hong Kong University Press; Cornell Southeast Asia Program Publications.

Jammer, Max (1999) *Einstein and Religion: Physics and Theology*, Princeton: Princeton University Press.

Janpoom, Kannika (2005) *Albert Einstein Yod Adchariya Tang Physic (Albert Einstein: Physics Genius),* Bangkok: Aksorn charoentat Publication.

Jerome, Fred and Taylor, Rodger (2006) *Einstein on Race and Racism*, London: Rutgers University Press.

'Jintanakan VS khwamru arai samkhan kwa kun? [Imagination and Knowledge, Which is more Important?], *Krungthepturakit*, (11 June 2005), p. 10.

Jumsai. Manich (1972) *Popular History of Thailand*, Bangkok: Chalermnit.

_____ (1992) *History of Thai Literature: (Including Laos, Shans, Khamti, Ahom, and Yunnan-Nanchao),* (2nd ed.), Bangkok: Chalermnit.

Jumsai. Manich and UNESCO. (1951) *Compulsory Education in Thailand*, Studies on Compulsory Education / UNESCO, 8 (Paris: UNESCO.

Kaewopat, Tanu (2003) *Einstien Nai Putthapratya (Einstein in Buddhism Wisdom)*, Bangkok: Sukkhaphap chai Publication.

_____ (2004) *Eakkapop Khong Einstein (Einstein's Universe),* Bangkok: Sukkhaphap Chai Publication.

Kaewpuangkham, Wongchai (2001) *Roi Paed Wata Einstein (a Myraid of Eisteins Words)*, Bangkok: Delfi Publication.

Kam-leung, Chan, Alan., Clancey, Gregory K. and Loy, Hui-Chieh (2003) *Historical Perspectives on East Asian Science, Technology and Medicine*, Singapore: Singapore University Press.

Kanjanarod, Poon (1954) *Phutthasatsana Tae Ching Tam Lak Wittayasat (Looking through the Authentic Buddhism with Scientific Method)*, Bangkok: Khurusapha Publishing.

'Kan san dap thang khwam khit chak Einstein Phop Phraphutthachao Hen', *Krungthepturakit*, (27 July 2008), p. 8.

Kapil, Raj (2007), *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*, Basingstoke: Palgrave Macmillan.

Kapon, S., (2014). 'Bridging the knowledge gap: An analysis of Albert Einstein's popularized presentation of the equivalence of mass and energy'. *Public understanding of science*, 23(8), pp.1013–24. Available at: http://www.ncbi.nlm.nih.gov/pubmed/23825279 [Accessed June 2, 2015].

Kasetsiri, Charnvit (2005) *Chak Sayam Pen Thai Nam Nan Samkhan Chanai?,* Bangkok: Matichon.

Keown, Damien (1996) *Buddhism: A Very Short Introduction*, Oxford: Oxford University Press.

Ketsingha, Uai (1971) *Wittayasat Sueksa Puttasatsana [Science Studies Buddhism],* Bangkok: Wat bowonniwet worawihan.

Keyes, Charles F. (1989) ''Buddhist Politics and Their Revolutionary Origins in Thailand'', *International Political Science Review,* vol. 10.

Khongin, Bandit (2004) 'Khon phop dao khro klai nueng muen chet phan pi saeng duai thitsadee Einstein [Discovering new planet with Einstein's theories] ', *Matichon*, 1 May, p. 19.

Khuppratakul, Chaiwat (2000) *Einstein Phu Phlik Chaakkawan [Albert Einstein: Who Turns the Universe]*, Bangkok: Sarakadee Publishing.

_____ (2005) *Chak Einstein Thueng Hawking (from Einstein to Hawking)*, Bangkok: Sarakadee Publishing.

Khuppratakul, Chaiwat. et al. (2002) *Review of 88 Good Science Books*, Bangkok: Double Nine Publishing.

Kim, Yung Sik (1998) 'Problems and Possibilities in the Study of the History of Korean Science', *Osiris,* 2nd series, vol. 13.

Kirsch, Thomas A. (1977) 'Complexity in the Thai Religious System: An Interpretation', *Journal of Asian Studies,* Vol.36.

Kitiarsa, Pattana (2010) Harrison, Rachel and Jackson, Peter A. (ed.) 'An Ambiguous Intimacy: Farang as Siamese Occidentalism', in *The Ambiguous Allure of the West: Traces of the Colonial in Thailand,* Hong Kong: Hong Kong University Press.

Kittiwat, Wirasa and Uchuphalanan, Tanapol (2000) Yuttawong, Yongyut (ed.) 'Policy and Institutes of Science and Technology in Thailand', in *Wittayasat Lae Teknoloyi Thai Chak Adit Su Patchuban [Thai Science and Technology: From the Past to the Present],* Bangkok: the National Science and Technology Development Agency (NSTDA).

Knell, Simon J., Watson, Sheila E. R. and Macleod, Suzanne (2007) *Museum Revolutions: How Museums Change and Are Changed,* London: Routledge.

Knight, David M. (2006) *Public Understanding of Science: A History of Communicating Scientific Ideas,* London: Routledge.

Kongmuang, Prayong (2005) *Jintanakan Samkan Kwa Kwamru (Einstein's quotes),* Bangkok: Matichon.

Kundilok, Charuphan (2007) 'Thale haeng kwamkwit [The Sea of Thoughts]', *Matichon*, 11 Sebtember, p. 9.

Lewenstein, Bruce V. (1995) Jasanoff, Shelia and others (ed.) 'Science and the Media', in *Handbook of Science and Technology Studies,* London: Sage Publications.

Lewis, Glen (2006) *Virtual Thailand: The Media and Cultural Politics in Thailand, Malaysia and Singapore, Rethinking Southeast Asia*, London: Routledge.

Lightman, Bernard V. (2007) *Victorian Popularizers of Science: Designing Nature for New Audiences,* (Chicago: University of Chicago Press.

Limapichart, Thanapol (2009) 'The Emergence of the Siamese Public Sphere: Colonial Modernity, Print Culture and the Practice of Criticism (1860s-1910s)', *South East Asia Research*, vol. 17 November.

Linanurak, Damrong (2008) 'Einstein wa Rongrian tong Fumfak Chantha khong Deknakrian [Einstein said that school should nurture chanta]', *Matichon*, 21 January, p. 7.

Reynolds, Frank E. and Reynolds, Mani B (1982) *Three Worlds According to King Ruang: A Thai Buddhist Cosmology,* Berkeley Buddhist Studies Series, Berkeley, Calif: Asian Humanities Press.

Lockhart, Robert S. (1998*) Introduction to Statistics and Data Analysis for the Behavioral Sciences,* New York: W.H. Freeman.

'Lok haeng kwamkhit lok haeng chintana banchoet lok haeng kawitanuphap [Perspective, and Imagination]', *Matichon*, (13 October 2006), p. 3.

Lom plian thit, 'Phraphutthachao kap Einstein [The Buddha and Einstein]', *Thairath*, (8 September 2007), p. 5.

Lopez, Donald S. (2004) *Buddhist Scriptures,* London: Penguin.

_____ (2008), *Buddhism & Science: A Guide for the Perplexed, Buddhism and Modernity,* Chicago: University of Chicago Press.

Low, Morris F. (1998) ' Beyond Joseph Needham: Science, Technology, and Medicine in East and Southeast Asia', *Osiris* 2nd series, vol. 13, pp.1-8.

Luisi, P. L., and Houshmand, Zara (2009) *Mind and Life: Discussions with the Dalai Lama on the Nature of Reality,* New York: Columbia University Press.

McCargo, Duncan (2000) *Politics and the Press in Thailand: Media Machinations, Rethinking Southeast Asia*, London: Routledge.

McDaniel, Justin Thomas (2011) *The Lovelorn Ghost and the Magical Monk: Practicing Buddhism in Modern Thailand,* New York: Columbia University Press.

Macdonald Fiona (1996) Lueanghiran, Kirana (trans.) *Albert Einstein: Nak Fisik Ti Mai Thammada,Phu Sadaeng Thitsadi Sampattapap an Num Pai Su Kan Patiwat Kawmkid Kiao Kap Ekkapop Tang Mod (Albert Einstein: Amazing Scientist)*, Bangkok: Nana Books.

Manirat, Sarot (2007) 'Khit yang tawantok- patibat yang tawan-ok [Think the Westerner way but Practice the Eastern way] ', *Matichon*, 23 December, p. 20.

Matchima, Teeron (2005) *Khwamchueaman Lae Satta Yam Plai Chiwit Albert Einstein [Faith and Trust through out the Later Year of Albert]* Bangkok: Khum kham Publishing.

'Matching poet 'Einstein' thurakit phleng naeo mai [Einstein, the New Music Bussiness] ', *Krungthepturakit*, (23 October 2009), p. 23.

Matichon (2004) *Photcchananukrom Chabap Matichon (Matichon Dictionary of the Thai Language)* Bangkok: Matichon Publishing.

Matichon Editorial Board (2006) *Chintanakan Samkan Kwa Kwamru (Einstein's Quotes)*, Bangkok: Matichon Publishing.

Matthieu, Ricard and Trinh Xuan Thuan (2009) Charoensuppakun, Kulsiri and Tanabunsombat, Buncha (Trans.) *Quantum Kap Dokbua: Kan Doenthang Su Promdaen Ti Wittayasat Kap Satsana Ma Banchop (The Quantum and the Lotus: A Journey to the Frontiers Where Science and Buddhism Meet)*, Bangkok: Suan ngoen mee ma.

McMahan, David L. (2004) 'Modernity and the Early Discourse of Scientific Buddhism' *Journal of the American Academy of Religion,* vol. 72, pp. 897-933.

_____ (2008) *The Making of Buddhist Modernism*, Oxford: Oxford University Press.

Mead, Kesbooncho, Kullada (2003) *The Rise and Decline of Thai Absolutism*, London: Routledge.

Mendel, S., (2015). 'On Hawking 's A Brief History of Time and the Present State of Physics'. *The British Journal for the Phillosophy of Science*, 44(3), pp.543–547.

Kaku, Michio (2004) Pongsiripat, Sawang (Trans.) *Nuea Miti Ti Si Khong Einstein (Beyond Einstein: The Cosmic Quest for the Theory of the Universe),* Bangkok: Kob fai Books.

_____ (2009) Pongsiripat, Sawang (Trans.) *Chakkawan Kong Einstein (Einsteins Cosmos: How Albert Einsteins Vision Transformed Our Understanding of Space and Time),* Bangkok: Kobfai Books.

Miller, Steve (2001) 'Public Understanding of Science at the Crossroads', *Public Understanding of Science,* vol. 10, January, pp.115-20.

Misap, Kitikon (2006) 'San Samanmit Freud- Einstein [Correspondence between Freud- Einstein]' *Matichon*, 13 May, pp. 25-26.

'Mothoso chaophap chat prachum Physics lok [Suranaree University of Technology arranges World Physics Meeting] ', *Matichon* (19 October 2004), p. 20.

Mulder, Niels (1979*) Everyday Life in Thailand: An Interpretation,* Bangkok: Duang Kamol.

_____ (1997) *Thai Images: The Culture of the Public World,* Chiang Mai: Silkworm Books.

_____ (2000) *Inside Thai Society: Religion, Everyday Life, Change*, Chiangmai: Silkworm Books.

Murphy, Priscilla Coit (2005), What a Book Can Do: The Publication and Reception of Silent Spring, Studies in Print Culture and the History of the Book, Amherst: University of Massachusetts Press.

Nacharoen, Rojjana (2005) *Faemlap FBI lae Einstein (The Einstein file).* Bangkok: Matichon Publishing.

'Naeo khit atsachan khong burut mahatsachan Einstein (1) [Amazing Views by the Miraculous Man (1)]', *Krungthepturakit*, (24 March 2005), p. 5.

'Naeo khit atsachan khong burut mahatsachan Einstein (2) [Amazing Views by the Miraculous Man (2)]', *Krungthepturakit*, (31 March 2005), p. 5.

'Nakwit Thaphisut Thitsadi Einstein mi kho Phitphlat [Scientists may have Found some Errors in Einstein's Theories]', *Krungthepturakit*, (12 April 2005), p. 9.

Nawikkamun, Anek (2006) *Farang Nai Muamg Sayam [Westerners in Siam]*, Bangkok: Samnakphim Sangdao.

Nelkin, Dorothy (1987), *Selling Science: How the Press Covers Science and Technology*, New York: W.H. Freeman.

Newell, Catherine Sarah (2008) 'Monks, Meditation and Missing Links Continuity, 'Orthodoxy' and the Vijja Dhammakaya in Thai Buddhism', Ph.D thesis, University of London.

'Nittayasan Time puey chue Einstein-Pinong Wright Tid Pho Phuesongphumpanya [Time reveals Einstein and the Wright Brother are in the List of the Hundred Most Influential People of the Century]'. *Krungthepthurakit* (22 March 1999), p.16.

Olsen, Grant A. (1992) 'Thai Cremation Volumes: A Brief History of a Unique Genre of Literature', *Asian Folklore Studies*, vol. 51, pp.279-94.

P.A. Payutto (2006) Suriyo (Trans.) *The Three Signs*, Bangkok: Aruna Publication.

Palakonkun, Sompon (2005) *Nueng Roi Pi Albert Einstein [One Hundred Years of Albert Einstein]*, Bangkok: Chomrom dek Publishing.

Pallant, Julie (2001) *SPSS Survival Manual: A Step-by-Step Guide to Data Analysis Using SPSS for Windows (Version 10),* Buckingham: Open University Press.

Paradon, Sakda (2008) *Nuengroi Pi Nungsuepim Lae Nittayasarn Muang Thai [A Hundred Years of Newspaper and Magazine in Thailand],* Bangkok: Sillapabannakarn.

Pawilai, Rawee (2000) *Lokkatat Chewatat Priapthiap Wittayasat Kap Puttasatsana (A Comparative View of Science and Buddhism),* Bangkok: Phuttatham Foundation.

Payne, Richard K. (2003) Ted, Peters and Gaymon, Bennett (ed.) 'Buddhism and the Sciences: Historical Background, Contemporary Developments', in *Bridging Science and Religion*, Minneapolis: Fortress Press.

Payutto, P. A. (1992) *Puttasatsana Nai Thana Pen Raktan Khong Wittayasat [Buddhism as the Foundation of Science],* Bangkok: Phuttatham Foundation.

Peleggi, Maurizio (2002) *Lords of Things: The Fashioning of the Siamese Monarchy's Modern Image*, Honolulu: University of Hawaii Press.

_____ (2007) *Thailand: The Worldly Kingdom,* London: Reaktion.

Penwijit, Chaiyapuek (1996) *Puttasat Kap Wittayasat [Buddhism and Science],* Bangkok: Dokya.

Phaochindamuk, Somsakul (2005) 'Fan pan tae Einstein [Einstein's Genuine Fan]', *Krungthepturakit*, 17 May, pp. 1-2.

_____ (2005) 'Einstein lae Darwin: tamnan haeng song thitsadi', *Krungthepturakit*, 16 June, p. 5.

_____ (2008) 'Buncha Tanaboonsombat chuan kit rueang Einstein [Buncha Tanaboonsombat: Let's Talk about Einstein]', *Krungthepturakit*, 27 April, p. 9.

Phillips, Herbert P. (1987*) Modern Thai Literature: With an Ethnographic Interpretation*, Honolulu: University of Hawaii Press.

Phongpaichit, Pasuk and Baker, Chris (1997) *Thailand: Economy and Politics*, Oxford: Oxford University Press.

'Phop laeo! Klong du dao Einstein thi hai pai [Found, Einstein Telescope]', *Krungthepturakit*, (25 September 2005), p. 9.

Piker, Steven (1976) Brow, James (ed.) 'The Closing of the Frontier', in *Population, Land and Structural Change in Sri Lanka and Thailand,* Leiden: Brill.

Piknoksikhao, 'Kwam pidplad khong Einstein Phop, Phraputtachao Hen nai lakkan hedphon Dr. Buncha Tanaboonsombat [The flaws in Einstein Phop, Phraputtachao Hen from Dr. Buncha Tanaboonsombat's view]. *Krungthepturakij*, 3 August 2008, pp.11-12

Plainoi, Sor (2005) *Mor Bradlae (Dr. Bradley),* Bangkok: Pimkum Publishing.

Pramat, Rawheem (Trans.) (2004) *Kao Pon Krop Einstein (Beyond Einstein),* Bangkok: Matichon Publishing.

Pramoj, Seni M.A. and Pramoj, Kukrit M.R. (1987) *A King of Siam Speaks*, Bangkok: The Siam Society.

'Pra mun ton chabap Einstein yi sip et chut ha lan [Einstein's original papers on auction]', *Matichon* (9 October 2002), p. 19.

'Pramoon Tonchabap Yakyai Nakphysik Lok [The world great physicist's manuscript is on auction]'. *Krungthepthurakit* (16 October 2002), p.8.

Pratomtat, Preut (2009) 'Sampat Chatri Prakitnontakan: Bap Rattasapa Mai Kwammai Doem Doem [Interview with Chatri Prakitnontakan: New Parliament, Old-Fashioned Meaning]', Prachathai Website. Accessed 2010. The website has been ceased.

Prayunsuk, Sakuna (2010) 'Doktoe Phairat Thatyaphong Nakwit pen nakkhian phu longlai

Einstein [Dr. Phairat Thatyaphong: Scientist and Author who is fond of Einstein]', *Matichon*, 30 October, pp. 17-18.

Promta, Sompan (1991) *Puttasatsana Lae Wittasat [Buddhism and Science],* Bangkok: Chulalongkorn University Publishing.

_____ (1999) *Puttapradya: Manut Sangkom Lae Panha Chariyatham. (Buddhism Philosophy: Human Society and Ethical Dilemma),* Bangkok: Sayam Publishing.

_____ (2005) *Puttapradchaya: Manut Sangkom Lae Panha Chariyatham. [Buddhism Philosophy: Human Society and Ethical Problem],* Bangkok: Sayam Publishing.

Pueksom, Davisakd (1998) 'Orientalizing the Occidental of Siam', *Journal of Political Science,* vol.20, pp.253-313.

Punyanupap, Suchep (1963) *Kunnalaksanapised Haeng Phutthasatsana [The True Values of Buddhism],* Bangkok: Khurusapha business organisation.

Ratchatapattanakul, Nippaporn (2005) *Sayam Phimpakan: Prawattisat Kan Phim Nai Prathet Thai (History of Printing in Thailand),* Bangkok: Matichon Publishing.

Rattanasuwan, Porn (1993) *Puttasatsana Kap Wittasat [Buddhism and Science]*, Bangkok: Sam nak khon kwa thang winyan.

Reynolds, Craig J. (1972*) 'The Buddhist Monkhood in Nineteenth Century Thailand'*, (unpublished Thesis (Ph.D) Cornell University, 1972 thesis, UMI Dissertation services.

_____ (1976) 'Buddhist Cosmography in Thai History, with Special Reference to Nineteenth-Century Culture Change' *Journal of Asian Studies,* vol. 35, pp.203-20.

_____ (1979) 'Monastery Lands and Labour Endowments in Thailand: Some Effects of Social and Economic Change 1868-1910' *Journal of Economic and Social History of the Orient,* vol.22, pp.190-227.

_____ (2003) *National Identity and Its Defenders: Thailand Today*, (Chiang Mai, Thailand: Silkworm.

_____ (2006) *Seditious Histories: Contesting Thai and Southeast Asian Pasts, Critical Dialogues in Southeast Asian Studies*, Seattle: University of Washington Press.

Rigden, John S. (2005) *Einstein 1905: The Standard of Greatness*, London: Harvard University Press.

'Roi pi Einstein roi pi haeng kan phlik chomna lok', *Matichon* (15 February 2005), p. 33.

Rodgers, M., (1992). 'The Hawking phenomenon', *Public Understanding of Science*, 1, pp.231–234.

Rowe, D.E., (2012). 'Einstein and Relativity: What Price Fame?' *Science in Context*, 25(02), pp.197–246. Available at: http://www.journals.cambridge.org/abstract_S026988971200004X, [Accessed 2 June 2015].

Sujira, Som, (2007) *Einstein Pop Phraputtachao Hen [Einstein Found Buddha Has Seen],* Bangkok: Amarin Printing.

Russell, Nicholas J. (2010) *Communicating Science: Professional, Popular, Literary*, (Cambridge: Cambridge University Press.

'Samong Atchariya [Einstein with Genius Brain', *Matichon* (19 June 1999), p. 18.

Satam, Phi (2005) 'Albert Einstein', *Matichon*, 18 September, p. 25.

Satirakul, Kamthon (1994) Chawalit, Manmad (ed.) 'Prawat Kanphim Thai [Thai Printing History]', in *Thai Junior encyclopedia,* Bangkok: Thai Junior encyclopedia project.

Scanlon, Eileen; Hill, Roger; Junker, Kirk and others, (1998) *Communicating Science,* London: Routledge .

Schober, Juliane (2002) *Sacred Biography in the Buddhist Traditions of South and Southeast Asia, 1st Indian,* Delhi: Motilal Banarsidass.

Schwartz, Joseph (1965) Licharoenchai, Rangsima (Trans.) *Albert Einstein Chabap Katoon (Einstein for Beginners),* Bangkok: Smit Publishing.

Schwartz, Joseph and McGuinness, Michael (1999) *Introducing Einstein*, Trumpington: Icon.

Scientific American (2004) Pramat, Rawheem (Trans) *Kao Pon Krop Einstein (Beyond Einstein)*, Bangkok: Matichon Publishing.

Science and the Public: A Review of Science Communication and Public Attitudes to Science in Britain, (2000) London: Wellcome Trust.

Science Museum Group Annual Report and Accounts 2011-2012 (2012) London: Stationery Office.

Seelig, Carl (2005) *Albert Einstein: Ideas and Opinion*, London: Souvenir Press.

Simon, Josep (2009) 'Communicating Physics in Nineteenth-Century France and England: The Production, Distribution and Use of Ganot's Textbooks' (unpublished PhD thesis), University of Leeds.

Siripun, Sakda (2005) *Kae Roi Einstein (Einstein: Life and Success),* Bangkok: Dan phasutha kan phim.

Sitthithanyakij, Paladisai (2004) *History of Siam*, Bangkok: Sukhaparbjai Publishing House.

Sivaraksa, Sulak (2005) *Conflict, Culture, Change: Engaged Buddhism in a Globalizing World,* Boston: Wisdom Publications.

Sivaraksa, Sulak and Udomitthiphong, Phiphop (2004) *Phutthasatsana Thai Lae Prachathippatai Thai Chak Mummong Khong So Siwarak,* Bangkok: The Siam Society.

Sivasundaram, Sujit (2010) Cantor, Geoffrey., Pumfrey, Stephen and Dixon, Thomas (ed.) 'A Global History of Science and Religion', in *Science and Religion: New Historical Perspectives,* Cambridge: Cambridge University Press.

Sonthet, Tutsadi (2005) 'Khamfan khong Einstein Siripong Witthayawirot plae [Einstein's Dream]', *Matichon*, 29 January, p. 3.

Sorensen, Thomas C. (1968) *The Word War: The Story of American Propaganda*, New York: Harper & Row.

Streckfuss, David (2011) *Truth on Trial in Thailand: Defamation, Treason, and L*Se-Majest*, Rethinking Southeast Asia,* London: Routledge.

Sudbanthad, Sukanya (2004) *Mor Bradley Kap Kan Nungsuepim Haeng Krung Sayam (Dr. Bradley and the Newspaper Business in Siam)*, Bangkok: Matichon Publishing.

'Sueksa song nak wittayasat adchariya khong lok Einstein pen autism [The Genius Einstein had Autism]', *Thairath*, (17 April 2009), p. 7.

Sujira, Som (2007) *Einstein Phop, Phraputtachao Hen [Einstein Found, Buddha Had Seen].* Amarin: Bangkok.

_____ (2010) *Einstein Phop, Phraputtachao Hen II [Einstein Found, Buddha Had Seen II].*

Amarin: Bangkok.

Suppaset, Akkara (Trans.) (2008) *Panyayan khong Einstein [Einstein's Intuition],* Bangkok: Kledthai.

Swanson, Herbert R. (2001) 'Origins of the Nineteenth-Century Transformation of Cosmology in Northern Siam: The Nan Intha-Mcgilvary Debates of Science and Religion', *Journal of the Siam Society* vol.89, pp.32-39.

Swearer, Donald K. (1970) *Buddhism in Transition*, Philadelphia: Westminster Press.

_____ (1976) *World Conqueror and World Renouncer: A Study of Buddhism and Polity in Thailand against a Historical Background, Cambridge Studies in Social Anthropology,* Cambridge: Cambridge University Press.

_____ (1981) *Sivaraksa Sulak and Ecumenical Institute for Study & Dialogue (Colombo Sri Lanka), Bhikkhu Buddhadasa: And the Buddhist Reformation in Thailand,* Columbo: Ecumenical Institute for Study and Dialogue.

_____ (1995) *The Buddhist World of Southeast Asia, Suny Series in Religion*, Albany: State University of New York Press.

_____ (2010) *The Buddhist World of Southeast Asia,* Albany: State University of New York Press.

Tadchayapong, Pairat (2007) *Einstein Lumdam Lae Big Bang (Albert Einstein: Black Hole and Big Bang),* Bangkok: Nanmee books.

Taengjai, Prasarn (1995) *Thamma Wittayasat: Rueang Kong Manut Lok Lae Chakkawan [Dhamma Science: The Story of Human, Earth and Cosmos]*, Bangkok: Phumpanya Foundation.

Takeuchi, Hitochi (1996) Suppaprakan, Nuantip (Trans.) *Albert Einstein: Pu-Khonpop-Ra-Boed Paramanu [Albert Einstein Who Invented Nuclear Bomb]*, Bangkok: Amarin Printing.

Tambiah, S. J. (1970) *Buddhism and the Spirit Cults in North-East Thailand, Cambridge Studies in Social Anthropology,* Cambridge: University Press.

Tanaboonsombat Buncha, (2002) Thitsadi Sampattapap Albert Einstein (Albert Einstein's Relativity Theory), Bangkok: Sarakadee.

_____ *(2003) 'Thaksin* VS Einstein: Kanmueang rueang Chuakhru yu mai nan samakan satcha

song khong niran [Thaksin VS Einstein: Politics is for the present, but an equation is for eternity]', *Krungthepturakit*, 24 July, p. 8.

_____ (2005) 'Einstein ton pen dek saen cha ngo thuem ching rue [Was young Einstein stupid?]', *Krungthepturakit*, 24 February, p. 8.

_____ (2005*) Fan Pan Tae Einstein [Einstein's Fan]*, Bangkok: Se-education Publishing.

_____ (2005*)* 'Samphattaphap VS Khwam mai Praeplian: Kaen Khwamkhit khong Einstein [Einstein's key concept: relativity vs invariance]', *Krungthepturakit*, 22 January, p. 10.

_____ (2008) 'Phiramit Haeng Arayatham Yukmai [Pyramid of Civilisation]', *Krungthepturakit*, 8 November, p. 6.

_____ (2008) '*Bueang lue bueang lang samakan* $E=mc^2$ *(1) [Behind* $E=mc^2$ *(1)]', Krungthepturakit, 29 November, p. 6.*

_____ *(2009) Samphattapap Sud Yod Moradok Tang Khwam Khid Khong Einstein [Relativity Theory: The Most Precious Heritage from Einstein]*, Bangkok: Sarakadee Publishing.

Tanaboonsombut, Buncha., Yoksan, Suthat. and Khuppratakul, Chaiwat (2005) *Einstein: Nueng Sattawat Heng Pi Mahatsachan (Einstein: One Decade of the Miracle Year)*, Bangkok: Sarakadee Publishing.

Tantichareon, Morakot; and Tangboriboonrat, Pramuan (2006) Yuttawong, Yongyut (ed.) 'Science and Technology Development in Genomics', *The Role of New Science and Technology in Thai Society: Gene, Nanotechnology and Thai Society,* Bangkok: Thai Academy of Science and Technology Foundation (TAST).

Tapingkae, Amnuay and Setti, Louis J. (1973) *Education in Thailand: Some Thai Perspectives*, Washington, U.S. Govt. Print. Off.: Dhew Publication; no (OE) pp.72-61.

Teerakul, Nimit (2005) *Albert Einstein Kap Fan Sud Tai Ti Klay Pen Ching (Albert Einsteins Last Dream)*, Bangkok: Direction plan Publication.

Terwiel, B. J. (1983) *A History of Modern Thailand, 1767-1942,* St. Lucia: University of Queensland Press.

_____ (1989) *A Window on Thai History*, Bangkok: Duangkamol.

_____ (2005) *Thailand's Political History: From the Fall of Ayyutthaya in 1767 to Recent Times,* Bangkok: River Books.

Thamchai, Anusorn (2007) 'Pharakit pho nam lang lueak tang [The PM's Mission after the Election]', *Krungthepturakit*, 10 November, p. 8.

Thanakitrungrueang, Kamonthip (2005) 'Wittayasat lae Chintanakan: sud thang kwamkit chak Einstein [Science and Imagination]', *Matichon*, 15 April, p. 20.

_____ (2005) 'Theknoloyi na thueng moradok chak man samong khong Einstein [Amazing Technology: outcomes of Einstein's brain]', *Matichon*, 21 February, p. 32.

The National Science and Technology Development of Thailand Agency (NSTDA) (2006) *The National Strategy; How to Raise Science Awareness among the Public,* Bangkok: The National Science and Technology Development of Thailand Agency.

The National Science and Technology Development of Thailand Agency (NSTDA) (2008) *Thailand Science and Technology Profile 2007* (Bangkok: NSTDA).

The National Science and Technology Development of Thailand Agency (NSTDA) (2009) *Thailand Science and Technology Profile 2008* (Bangkok: NSTDA).

The Public Understanding of Science Report (1985) London: The Royal Society.

Thepwethi, Phra (1985*) Photchananukrom Phutthasat: Chabap Pramuan Tham = Dictionary of Buddhism,* Bangkok: Maha Chulalongkon Ratchawitthayalai.

Thomas, E.G., (2005). 'What's so special about E = mc 2 ? Separating truth from myth'. *European Journal of Physics*, 26(6), pp.125–S130. Available at: http://stacks.iop.org/0143-0807/26/i=6/a=S06?key=crossref.660e7522e17aa0dfd4137ca759dc1d35 [Accessed June 2, 2015].

Thongsuk, Praphas (2009) 'Ru wa rao yang mai ru aria [To Realise What We do not Know]', *Krungthepturakit*, 26 June, p. 28.

'Thua lok triam chalong roi pi Einstein [The World is preparing to Celebrate 100 years of Einstein]', *Matichon* (9 October 2004), p. 20.

Tinnaluk, Yuwanuch (2005) 'Knowledge Creation and Sustainable Development: A Collaborative Process between Thai Local Wisdom and Modern Science', Ph.D Thesis, University de Poitiers.

Tirawanit, Sukanya (1977) *Prawat Kan Nungsuepim Nai Prathetthai Pai Tai Rabop Somburanayasittirat [History of Thai Newspapers under Abosolute Monarchy (1782-1932)]*, Bangkok: Thai Wattanapanich.

Tongrungroj, Jetsada (2005) *Albert Einstein: Manut Lae a-Pi-Manut (Albert Einstein; Human and Superhuman),* Bangkok: Sukkhaphap chai Publication.

Topham, Jonathan R. (2009) Turner, Michael and Suarez, Michael (ed.) 'Scientific and Medical Books, 1780-1830', in *The Cambridge History of the Book in Britain Vol. 5, 1695-1830,* Cambridge: Cambridge University Press.

_____ (2000) 'Scientific Publishing and the Reading of Science in Nineteenth-Century Britain: A Historiographical Survey and Guide to Sources', *Studies of History and Philosophy of Science, Vol.* 31, pp.559-612.

Turney, Jon (2008) Bucchi, Massimiano and Trench, Brian (ed.) 'Popular Science', in *Handbook of Public Communication of Science and Technology*, London: Routledge.

Visalo, Phaisan, *Phuttasatsana* (2003) *Thai Nai Anakod [the Future of Thai Buddhism]*, Bangkok: Sodsri-Saridwongsa Foundation.

Wachirayanawarorot and Reynolds, Craig J. (1979) *Autobiography: The Life of Prince-Patriarch Vajirayana of Siam, 1860-1921,* Athens: Ohio University Press.

Wallace, B. Alan (1996) *Choosing Reality: A Buddhist View of Physics and the Mind*, New York: Snow Lion Publications.

_____ (2003) *Buddhism & Science Breaking New Ground*, New York: Columbia University Press.

_____ (2007) *Contemplative Science: Where Buddhism and Neuroscience Converge,* New York: Columbia University Press.

Wanichchai, Yupha (2005) *Aisatai lae samphatthaphap thuaipai [Einstein and the Theory of General Relativity]*, Chonburi: Rongphim Burapha.

Wangwinyu, Wisit (2004) 'Tham khwamkhaochai rueang IQ: muea dek chai Einstein mai chai bat kham [IQ and Einstein] ', *Matichon*, 4 December, p. 8.

Wasalai, Wimut (2005) 'Kangkhen Einstein [Einstein cross]', *Matichon*, 5 February, p. 20.

Watanabe Masa-o., Inukami, Hirichi and Yamamoto, Kikuo (1997) Ruetapon, Itti (Trans.) *Adchariya Einstein (Einstein Is Genius),* Bangkok: Se-education Publishing.

Wiangnon, Rikan (2008) 'Tam roi Einstein [Tracing Einstein]', *Krungthepturakit*, 24 June, p. 3.

Winichakul, Thongchai (1995) *Siam Mapped: A History of the Geo-Body of a Nation,* Chiang Mai: Silwkorm Books.

_____ (1996) 'Roka Loka Phiwat Kap Phumkumkan Phok Phrong [Globalization Disease and Immune Deficiency]', *Sangkomsat Pharitat,* vol. 18 (July-December), pp.15-28.

_____ (2000) 'The Quest for 'Siwilai': A Geographical Discourse of Civilizational Thinking in the Late Nineteenth and Early Twentieth-Century Siam', *Journal of Asian Studies,* vol. 59, pp.528-49.

Wisetsang, Anchali (1999) *Einstein Kap Thitsadee Sampattapap [Einstein and Relativity Theory],* Bangkok: Smit Publishing.

Witthayawirot, Siriphong (2005) 'Khamfan khong Einstein', *Matichon*, 21 February, p. 6.

_____ (2005) 'Einstein kap lisa kamnoet lae chutchop khong Chakkawan', *Matichon*, 14 February, p. 6.

Wongthet, Suchit (2006) 'Watthanatham Khamkhit khwamru chak Sunthon Phu thueng Einstein [Cultural Perspective and Knowledge from Sunthon Phu to Einstein]', *Matichon*, 8 November, p. 34.

_____ (2007) 'Chintanakan samkan kwa khwamru: tae watthanatham samkan kwa chintanakan [Imagination is more Important than Knowledge]' *Matichon*, 26 October, p. 34.

Worachayangkul, Chakhrit (2002) *Albert Einstein Nagwittayasat Ek Khong Lok [Albert Einstein: The World's Most Outstanding Scientist],* Bangkok: Namfon Publishing.

Wyatt, David K. (1969) *The Politics of Reform in Thailand: Education in the Reign of King Chulalongkorn,* London: Yale University Press.

_____ (1986) *Thailand: A Short History,* London: Yale University Press.

_____ (2002) *Siam in Mind,* Chiang Mai: Silkworm Books.

Yanwiro, Hem (2010) *Bangsing thi na siadai-- Einstein mai khoei phop tae Phraphutthachao hen*

[Some disappointing that Einstein Never had Discovered but the Buddha Had Seen], Bangkok: Yon Roy.