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From ‘Mung Ming’ to ‘Baby Gammy’: a local history of assisted reproduction in Thailand

Andrea Whittaker

Convenor, Anthropology, School of Social Sciences, Monash University, Clayton, Melbourne VIC, 3008, Australia
E-mail address: andrea.whittaker@monash.edu.au.



Associate Professor Andrea Whittaker is ARC Future Fellow and Convenor of Anthropology at the School of Social Sciences, Monash University, Melbourne, Australia. She is a medical anthropologist working primarily in the fields of reproductive health and biotechnologies with a special interest on Thailand and SE Asia. Her Australian Research Council Future Fellowship studies the reproductive travel in Thailand and the region for sex selection and surrogacy. Her major publications include *Intimate Knowledge: Women and their Health in Northeast Thailand* (2000), *Abortion, Sin and the State in Thailand* (2004) and *Thai in vitro: Gender, culture and assisted reproduction* (2015)

Abstract This paper documents the rapidly changing history of IVF in Thailand since the birth of the first IVF conceived child there in 1987. The paper is based upon extensive Thai and English media material as well as interviews with leading reproductive specialists and is informed by long-term ethnographic research on IVF in Thailand. Assisted reproduction was quickly accepted in Thai society and associated with modernity and nationalist pride in Thai scientific progress. From its early beginnings in state-owned teaching hospitals, assisted reproduction rapidly expanded into the Thai private sector. Although Thai Medical Council guidelines were introduced in 1997, the loose regulatory regime saw the growth of an international trade in assisted reproductive technology services and medical facilitation companies brokering commercial surrogacies. From 2011, various controversies brought the industry into disrepute. These included: the trafficking of Vietnamese women as surrogates; non-medical sex selection and commercial ova donation and commercial surrogacy in breach of Thai Medical Council guidelines; the highly publicised case of a Japanese man commissioning 15 children with multiple surrogates; and the ‘Baby Gammy’ case involving the abandonment of a twin born with Down Syndrome. These cases exposed the exploitative downside of an assisted reproductive technology market that takes advantage of countries with little or no regulation in place and led Thai society to question the benefits of these technologies, their practitioners and the industry it has created. Since 2015, new legislation restricts clinical practices, limits eligibility for services and bans all commercial ova donation or surrogacy or its facilitation.

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Introduction

In 1987 reproduction changed in Thailand with the birth of the first Thai baby conceived through IVF. As had occurred

previously in the context of the effort to restrict fertility, the technical ability to assist reproduction using IVF was accompanied by new promises and problems for Thai society. During the 1970s, Thailand was a site for

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experimentation and implementation of new contraceptive methods supported by the World Health Organisation (WHO), foreign donors and philanthropic organizations and a large-scale National Family Planning programme that had successfully limited population growth in a mere 15 years by reducing the number of births per woman from 7.63 in 1969 to 3.82 in 1984 (Knodel et al., 1987). Early experiments in human reproductive biology in Thailand grew from the needs of the family planning programme to control fertility. But following the success of IVF elsewhere in the world, Thai specialists began to experiment with in-vitro techniques, leading to the development of a Thai IVF industry to assist people experiencing infertility. By 2007 there were 30 clinics licensed to provide assisted reproductive treatment in Thailand, carrying out over 4288 cycles per year, evidence of the rapid penetration of new reproductive technologies across the country (Vutyavanich et al., 2011).

This paper documents the rapidly changing history of IVF in Thailand since 1987, the local Thai manifestation of the broader history of global assisted reproduction, and the locally specific expectations and events of reproduction in Thailand. It starts with a brief chronology of IVF in Thailand and then explores the gradual 'naturalization' (Lock and Kaufert, 1998 p. 19) of this procedure, a term used by anthropologists to describe its incorporation into the reproductive repertoire of Thai couples as an accepted and normal means of conception. It goes on to outline the controversies, contradictions and dilemmas the introduction of assisted reproductive technology posed for Thai conceptions of life, gender relations and motherhood, culminating in the recent series of crises which have led Thai society to question the benefits of these technologies, their practitioners and the industry it has spawned – and indeed to de-naturalise the technology again.

This paper draws upon extensive media material from both Thai- and English-language newspapers, books and internet sources. Articles were collected from major Thai newspaper archives in Thailand dating from 1978 (the date of the birth of the world's first IVF baby in the UK) to 2015. These included the Thai language newspapers: *Thai Rath*, *Thai Post*, *Matichon*, *Daily News*, *Ban Muang*, *Bizweek* as well as English-language newspapers: *The Nation* and *Bangkok Post*. Much of this material is only available in hardcopy from the National Thai Archives. More recent material was available online through archives of newspapers such as *Matichon* and *Thai Rath*. A search on Thai-language internet sites such as www.mthai.com also provided recent commentary on events. Search terms included: IVF, test-tube baby/*dek lord kaew*, infertility/*khon mi luk yak*, ICSI, GIFT, TESA, surrogacy/*umbun*. A Thai research assistant helped with the translations of the Thai material. Later Australian press material from 2012–2016 was obtained through newspaper archives accessed via the NewsBank database and included the search terms 'Baby Gammy', and 'Surrogacy'. This paper also draws upon two in-depth interviews with Professor Pramuan Virutamasen, a leading figure in the history of IVF in Thailand, as well as informal discussions with other reproductive specialists and more recently, interviews with members of the Thai Medical Council and Royal Thai College of Obstetrics and Gynaecology undertaken during long term ethnographic research on IVF in Thailand for eight months in 2007–2008 and several short term fieldwork trips (Whittaker, 2015). No

attempt has been made to conceal identities that are already reported in the public domain such as Professor Virutamasen, however, in all other cases pseudonyms are used for real names and clinics. This work was conducted as part of a broader study funded by the Australian government through the Australian Research Council and ethical clearance to conduct the project was received from the University of Melbourne Human Research Ethics Committee (HREC 060504X.2), the Faculty of Medicine, Mahidol University (016/2550) and the National Research Council of Thailand (No. 0002.3/2069).

The Thai context

It is estimated that there are 10 million infertile couples in Thailand (Chiamchanya and Su-Angkawatin, 2008) out of a current population of 67 million people. The majority of Thais are Theravadhan Buddhists (over 90%) and of Thai or Sino-Thai ethnicity. There are no religious proscriptions affecting the use of assisted reproduction, which is understood as meritorious action facilitating the rebirth of a life force. However, particular ethical issues regarding the disposal of embryos, their manipulation and the use of fetal material may be understood as a transgression of the Buddhist precept against the destruction of life (Whittaker, 2015 p. 7).

Thailand has an excellent public health system but in recent years has suffered from an internal 'brain drain' of specialists from the public sector into private hospitals and clinics (Wibulpolprasert and Cha-aim, 2008). All major public hospitals now provide assisted reproductive treatment, but the majority of providers are in private hospitals and clinics. For those specialists who do work in the public sector, it is common and permitted to work across both the public sector and private sector. Many fertility specialists who work in public hospitals also maintain lucrative private clinics and there is a general perception that treatment in a specialist's own private clinic will entail more personalized care, less crowding, longer consultations and higher likelihood of success (Whittaker, 2015 p. 150). Nevertheless certain public clinics in Thai teaching hospitals retain prestige as important sites of scientific advancement and research.

However, the availability of assisted reproductive treatment remains limited and inaccessible for most of those who require treatment (Vutyavanich et al., 2011). With no public insurance available for infertility treatment in Thailand, assisted reproduction remains an out-of-pocket expense beyond the financial reach of most average Thais. The difference in cost between public and private treatment ranges on average between US \$2900 per cycle in government hospitals to US \$5800 or more per cycle in private centres, while the average per capita income of Thais is estimated to be US \$240 per month (Vutyavanich et al., 2011). This cost differential reflects patient preference for particular clinicians who are able to command higher prices, and the fact that in private centres, patients have access to their choice of specialist, staff costs are higher and treatments may involve a range of additional procedures or more expensive medications. In addition, three-quarters of the infertility clinics in Thailand are in the urban centres (Vutyavanich et al., 2011), limiting physical accessibility for the majority of the population living in rural areas.

A chronology of assisted reproduction in Thailand

Thailand's first IVF baby, nicknamed 'Mung Ming', was born at Chulalongkorn Hospital in 1987. Thailand's *dek lord kaew* (glass tube child) was described as the 2999th baby to be born through IVF worldwide (the three nines making this an especially auspicious number for Thais), coming nearly a decade after the birth of Louise Brown in 1978 in Britain (Matichon, 1987a). He was named Pawornwit Srisaburi (ปาวรวิทย์ ศรีสาบุริ) which is derived from the names of the doctors who helped in his conception – the letter 'P' was from the first character of Pramuan Virutamasen and the letter 'w' from the first character of the first name of the assisting doctor, Wisut Boonkasemsanti.

Mung Ming's arrival was heralded as evidence of Thailand's scientific excellence and modernity. Thai press described the doctors involved as 'proficient, excellent, world-class'. The head of the Obstetrics and Gynaecology Department, Chulalongkorn Hospital, Dr Nikon Dusitsin, declared that although other countries like Singapore and Taiwan had succeeded earlier, these countries had brought in foreign experts to conduct their IVF experiments; the effort in Thailand had been conducted only by Thais (Ban Muang, 1987; Thai Rath, 1987). The patriotic nature of scientific endeavour was further underscored by a statement attributed to Professor Pramuan in a report in the Matichon (1987a) newspaper where he was quoted as stating that 'the reason for doing this experiment is to participate in the King's sixtieth birthday celebration and also because there are around forty infertile couples contacting him for treatment each week'. From early on, then, assisted reproduction was positioned as a positive symbol of Thai expertise and with 'Thainess' and nationhood itself through the evocation of Thai royalty (the King of Thailand is closely associated with engineering and scientific ventures and the Royal family is associated with biomedicine; the King Bhumiphol's mother trained as a nurse and his father HRH Prince Mahidol Adulyadej earned degrees in public health and medicine).

Although Thai assisted reproduction was flaunted as the product of Thai doctors, in fact the development of IVF in Thailand was a collaborative affair in which technical knowledge and expertise was passed on through international study, fellowships from philanthropic organisations, international conferences and visiting specialists, a pattern of knowledge transfers from centres of reproductive biology to peripheral countries that continues today. In an interview with the 'Father of IVF in Thailand', Professor Virutamasen detailed some of the travel and movement of reproductive scientists that influenced his work. His story started in 1969 when he received a scholarship from Ford Foundation to undertake postgraduate research on the biology of reproduction at the University of Pennsylvania, division of biology, working with three pioneers in rat reproductive biology:

There was a research project on in-vitro fertilization and transferring embryos to a rat at the time. I had a chance to observe and help out. If you look back to the history 1963–64, Dr Britzer (from University of Pennsylvania) initiated so many things, however, the world paid more attention to the first person who succeeded with IVF and transferring... In the same year, I got inspired. I attended a meeting in ACOG in New York. Professor

Patrick Steptoe demonstrated the procedures of how to look through the abdominal surface, with a laparoscope, and drew out eggs to use... Then, I came back to Thailand around 1972. With the support from the WHO in Human Reproduction (WHO CCR- the WHO Collaborating Centre for Research in Human Reproduction) we started a laboratory where they had hormone diagnosis etc. Here is the first place (in the world) where it was supported by a WHO-CCR project. Many specialists from overseas such as Sweden, India, and Australia were invited. I did not have much knowledge then. It took around 3–4 years. The focus was on family planning first, then, using lab procedures to assist [with reproduction].

Initially research in reproductive biology was directed towards the needs of understanding fertility for family planning. After his return from the USA, Professor Pramuan began to experiment with the collection of mouse oocytes. At this time Professor CR Bannister from Cambridge University came to visit Chulalongkorn University for six months and demonstrated how to modify some basic equipment and perform in-vitro culture. This helped Professor Pramuan refine his techniques. Then around 1986, Dr Wittaya returned to Thailand. He had studied at Cambridge with Professor CR Austin who had, in turn, worked with Dr Min Chueh Chang who was the first person to perform successful in-vitro fertilization on a rabbit (Chang, 1959). According to Professor Pramuan, by the mid-1980s the team at Chulalongkorn was already fertilizing mouse eggs and growing their embryos. A young woman admitted for surgery for carcinoma donated her oocytes for human research and soon afterwards Professor Pramuan had success with the fertilization and culturing of human embryos *in vitro*.

In 1988 the second IVF baby, nicknamed 'Oil', was born. In keeping with Thai beliefs, she was delivered full term during a Caesarean section at an auspicious time (between 10–12pm) chosen by the parents to ensure the baby would be healthy, obedient, co-operative and lucky according to her horoscope (Thai Rath, 1989).

As can be seen in Table 1, unlike the development of IVF in India where the technologies and personnel quickly transferred to the private sector (Bharadwaj, 2002) in Thailand the major advances in reproductive technologies were made in the public sector at major university/teaching hospitals (such as Chulalongkorn Hospital and the Police Hospital) and they retain prestige as leading centres for treatment and research. Although initially confined to Bangkok, IVF technologies quickly spread throughout Thailand. By the tenth anniversary of Mung Ming's birth, assisted reproductive technologies were available across the country.

The advent of new language

A by-product of the rapid expansion of assisted reproductive technologies was the creation of new Thai terms and discourses and a new understanding of infertility as a condition. With the advent of each new technological intervention, new categories of 'patients', such as infertile men, older women or HIV-positive men, were created and infertility itself became a 'disease' to be treated in the realm of biomedicine. The media coverage placed infertility in public view in Thailand, representing the infertile as patients for whom technology could offer solutions. Until this time, infertility was only treatable through religious

Table 1 A chronology of events in assisted reproductive technology in Thailand.

Year	Event	Location
1984	Thailand's first sperm bank	Chulalongkorn Hospital
1986	First IVF and embryo transfer success (Dr Pramuan Virutamasen)	Chulalongkorn Hospital
1987	First baby born through IVF (Mung Ming)	Chulalongkorn Hospital
1987	First baby born through gamete intra-Fallopian transfer (GIFT)–Dr Jongjate Aojanepong	Police hospital
1989	Second IVF baby born (Oil) (Dr Pramuan Virutamasen)	Chulalongkorn Hospital
1990	The first set of IVF triplets (girls)	Chulalongkorn Hospital
1991	First baby born from a frozen embryo	Chulalongkorn Hospital
1991	First surrogacy case	Chulalongkorn Hospital
1992	First case of quadruplets (their second IVF case)	Bumrungrad Hospital
1996	First TESE/ICSI – Dr Jongjate Aojanepong	Police hospital
1997	Thai Medical Council guidelines introduced for use of ART (Announcement 1/2540)	
2001	Further Thai Medical Council guidelines introduced (Announcement 21/2544)	
2005	First set of IVF quintuplets	Hat Yai Hospital
2010	Draft Assisted Reproductive Technologies Bill 167/2553 approved by cabinet	
2015	Assisted Reproductive Technologies Bill 167/2553 passed House of Representatives	

ART = assisted reproductive technology; ICSI = intracytoplasmic sperm injection; TESE = testicular sperm extraction.

means by 'bargaining' for babies from various spirits or Gods, or via herbal treatments or resolved through informal or formal adoption. A new vocabulary reflected the growing understanding and incorporation of assisted reproduction as a form of conception. In early reports the term *phasom tiam* (ผสมเทียม [literally, 'artificial mixing']) was used to describe both artificial insemination and a range of IVF techniques. As IVF literacy improved among the press, new terms came into being. The term *dek lord kaew* (เด็กหลอดแก้ว ['glass-tube baby']) emerged to differentiate IVF from other techniques. Eventually English scientific acronyms came to be used directly in Thai to name the various techniques such as IVF, GIFT (gamete intra-Fallopian transfer), ZIFT (zygote intra-Fallopian transfer).

Surrogacy also displayed a similar transition through the language used to describe it. When the term first appeared in newspapers, a range of terms were used from the formal descriptive terms '*tham hay mii luk day doi kanjang khon uen tangkhan*' (having a child through the use of another person to carry the pregnancy) (Matichon, 1987b) and '*kan rapjang tangthong*' (process of hiring a pregnancy) (Matichon, 1987a) or '*kan rapjang tangkhan*' (process of hiring a pregnancy, polite term) (Daily News, 1987). The use of the term '*rapjang*' implied the use of hired labour and a commercial relationship. By 2000 the term '*kan rapjang um thong*' (process of hiring to carry a pregnancy) was used for commercial surrogacy, but also the term '*umbun*' (Thai Post, 2000a) can be found for surrogacy following its use in a popular television series. By 2004 '*umbun*' was used for all forms of surrogacy (KhaoSod, 2004). Unlike the other terms, '*umbun*' literally means 'carrying the merit'; '*um*' is used when referring to carrying children around and the merit '*bun*', referred to is the Buddhist merit women receive through undergoing pregnancy and giving birth. In this way, the concept of surrogacy became incorporated into the Thai Buddhist moral world.

IVF reinforcing gender ideologies

At the same time that aspects of assisted reproduction challenged conceptions of the family and motherhood, it

also reinforced local gendered ideologies of the importance of motherhood to women as a source of female Buddhist merit, and fertility as a demonstration of masculine virility. As more and more children were born through IVF, especially to wealthy and elite women, the technologies began to be depicted as complementing women's desires to be mothers, a social good facilitated by benevolent male doctors – not as a social problem creating problematic children. Stories in the press of elite women and celebrities using the technologies served to legitimise and popularise their use and removed some of the early stigma and shame associated with it. Indeed, by 2004, one doctor was complaining that IVF had become the 'fashionable' way to conceive and that the public had forgotten the risks associated with it (Dr Poonsak Waikhwamdi in Threchana and Pimongsin, 2004 pp. 103–4).

As clinics advertised their growing success, it became more incumbent upon women to 'try' to conceive through these technologies. In ethnographic work conducted in 2007–8 in Thai clinics (Whittaker, 2015 pp. 170–1), although many women were enthusiastic participants in treatment, others spoke frankly of the need and expectations placed upon them by husbands and kin to at least 'try' assisted reproduction to fulfil gendered expectations of a woman's role. The introduction of intracytoplasmic sperm injection (ICSI) in 1996 offered hope for men suffering from male-factor infertility, but further placed pressure upon women (who might have no infertility factor) to submit to IVF treatment to produce a child related biologically to their partner. ICSI rapidly became introduced in Thailand and by 2007, ICSI accounted for 63% of all cycles undertaken in Thailand (Vutyavanich et al., 2011).

Despite a reputation as a society tolerant of homosexuality, the use of assisted reproductive technologies by single women and men, or by homosexual couples to form families has long been banned under the Thai Medical Council guidelines on the use of assisted reproductive technology. Despite this, Thailand was promoted by a number of surrogacy facilitation agencies as offering 'gay friendly' services and several clinics did provide services to gay and

lesbian couples. For example, US-based company Thailand Surrogacy stated on its website that 'We at Thailand Surrogacy are open-minded and assist many gay and lesbian couples every year to achieve their dreams of having a baby' (www.thailand-surrogacy.com/blog/ 30 August 2011). Within the Thai press however, stories of single people and homosexual couples using assisted reproductive technology to form families generated public criticism. For example, in 2000 the announcement of plans by a prominent lesbian couple, businesswoman Philaiphon Bunlon and her partner actress Arunothai Jittrikhan, to use donor sperm to form a family was met with public condemnation, as a result the couple stated they would go overseas for the procedure ([Thai Post, 2000a, 2000b](#)).

Ethical dilemmas for Thai assisted reproduction

As well as posing moral questions for society, the introduction of assisted conception technology posed new local ethical challenges for established religious orders. The majority of the Thai population is Theravadhan Buddhist, with small Muslim and Christian minorities. Within Theravadhan Buddhism, there is no single authoritative Buddhist position on assisted reproduction in Thailand ([Ratanakul, 1988](#)). Buddhist commentators tend to support the use of assisted reproduction as a meritorious act when undertaken for non-selfish reasons facilitating the rebirth of another life force but ultimately the outcome is governed by the karmic balance of good deeds (*bun*) and the destiny of the parents.

An important concern for reproductive scientists is how to interpret the status of the embryo. Among Thai fertility specialists there remains unease over the status of the embryo within assisted reproduction as it is considered a life form in Buddhist belief. Questions over the disposition of embryos remain unresolved in many clinics (see discussion in [Santimatnedol and Olarikkachat, 1998](#)).

Attempts at regulation

Despite the various concerns about assisted reproduction and calls for the need for regulation as early as 1987 ([Matichon, 1987a, 1987c](#)), it was not until ten years after the birth of the first Thai child conceived through IVF that the Thai Medical Council introduced professional guidelines for assisted reproduction in 1997 (Announcement 1/2540) and further in 2001 (Announcement 21/2544). These guidelines prescribed that each centre offering these technologies was required to have an ethics committee and banned commercial ova donation and commercial surrogacy. However, these guidelines lacked any legislative force and the Royal Thai College of Obstetrics and Gynaecologists (RTCOC) had a limited capacity to enforce them. Draft legislation was formulated from 1997 ([Bangkok Post, 1997](#)) and a process of public consultations took place throughout 2000 ([Thai Post, 2000a, 2000b](#)), however it was not until 11 May 2010 that the Thai cabinet approved the draft 'Pregnancy by Medically Assisted Reproductive Technology Act' bill number 167/2553 ([Adams, 2010](#)). However, political instability in subsequent years prevented any further progress on the issue until 2014.

The growth of an Asian 'baby factory'

With the benefit of the growing public acceptance of assisted reproduction, the industry grew rapidly and saw the development of a range of practices that took advantage of the loose regulatory framework. The inadequacies of the regulatory framework came to prominence through a series of controversies which revealed the presence of an illegal trade in surrogacy and a range of other practices that infringed the spirit, if not the letter, of the Thai Medical Council guidelines. The first of these occurred in January 2011 when Thai police raided a house in a suburb of Bangkok run by the Taiwanese company 'Baby 101' (also known as 'Babe 101' or 'Baby1001') revealing the organized trafficking of Vietnamese women for surrogacy to produce babies for Taiwanese couples. At the time of the raid, thirteen Vietnamese women were rescued, and a further two women were identified, one at a hospital after just having given birth. Seven of the women were pregnant, one with twins. Two of the women who were eighteen weeks pregnant sought to abort their pregnancies but were refused permission to do so.

On 22 June 2012 the Thai Primary Court found all five defendants in the case guilty as charged. One Taiwanese woman was sentenced to 5.3 years in jail for human trafficking, conspiracy to detain/confine other persons and working in the Kingdom without a work permit, and a 220,000 Baht fine (US \$7040) for hiring illegal migrants. Another three Taiwanese defendants were sentenced to 5.3 years in jail for human trafficking, conspiracy to detain/confine other persons and working in the Kingdom without a work permit, and a Chinese defendant was sentenced to 3 months in jail for working in the Kingdom without a work permit. The Taiwanese leader of the organization was not charged ([Alliance Anti Trafic \[AAT\], 2012; The Nation, 2011](#)). After protracted negotiations and legal processes, on 11 December 2011 eleven babies involved were sent to Taiwan to their eight biological families ([Alliance Anti Trafic \[AAT\] Vietnam, 2011](#)). Despite public outrage within the Thai press at the time, this case prompted no widespread investigation into the industry.

Other controversial cases in 2014 drew public attention to flagrant breaches of medical guidelines, potential exploitation and legal ambiguities surrounding the assisted reproductive industry in Thailand. The first of these was a report in July 2014 on non-medical sex selection which found a number of clinics advertising sex selection services in breach of Thai Medical Council guidelines – an investigation was launched into twelve 'targeted' clinics ([The Nation, 2014](#)). Meanwhile, there was the highly publicised cases of Israeli intending parents (many of them gay couples) whose babies born through surrogacy arrangements were stranded in Thailand as the Israeli government refused to grant them citizenship ([Murdoch and Snow, 2014](#)).

These cases drew public attention to the growth in commercial surrogacy services for foreigners. What had been a discrete practice became a heavily promoted industry. Major growth of the surrogacy industry in Thailand occurred following Indian surrogacy visa regulations implemented in 2011/2012 that restricted access to married heterosexual couples only. From 2011 a range of new private clinics and surrogacy agencies and facilitation companies specializing in ova donation and surrogacy emerged. As

information about the possibilities in Thailand grew, there was a rapid increase in foreign couples travelling to Thailand (Everingham et al., 2014; Whittaker, 2012).

In August 2014 another story broke in the media of a Japanese man, Mitsutoki Shigeta, who reportedly fathered fifteen babies to multiple surrogate mothers in Thailand and had fled the country with at least three of the babies. The clinic involved in his case was closed pending investigation (Gecker and Dokson, 2014). The doctor involved has had his case for indictment delayed four times (Bangkok Post, 2015a, 2015b). This case prompted descriptions of Thailand as a 'baby factory' in the Thai press.

These cases brought the image of assisted reproductive technology as a social good facilitated by authoritative benevolent doctors into question. The development of a foreign market in commercial surrogacy and ova, evidence of the criminal trafficking of women and breaches of existing medical guidelines brought the medical profession, IVF and its associated technologies into disrepute. Police raids and closure of 12 clinics, the public arrest and trials of doctors and open discussion of a lack of ethics associated with these cases began to erode the earlier confidence in IVF in Thailand (for example, see Bangkok Post, 2014, Chantharak and Inthaket, 2014, Prasert, 2014; ThaiPBS, 2014). So, paradoxically, the Thai public's early acceptance of IVF enabled the country to become a hub of assisted reproductive technology services, yet the growth of an international trade also highlighted its complex legal and ethical challenges and led to growing public and political unease.

Baby Gammy

More than any other, the case of 'Baby Gammy' drew worldwide attention to the presence and practices of the cross-border assisted reproduction and surrogacy industry in Thailand, the complex legal and ethical issues involved and the laxity of regulations in Thailand. In August 2014, the media exposed the story of Baby Gammy, a baby boy with Down syndrome who had been abandoned in Thailand by his Australian intended parents (and biological father) to be cared for by his gestational surrogate (Murdoch, 2014; Whiteman, 2014). His twin sister had been taken back to Australia. The story broke after appeals from the surrogate, Ms Janbua Pattharamon, for support for Baby Gammy's medical expenses from international donors. She appeared in the media explaining that she had agreed to be a surrogate to pay off family debts and had refused an abortion when it was discovered that one of the twins she was carrying had Down syndrome. Rather than institutionalise the boy child, she offered to care for him. The intending parents took the daughter and left the country, leaving the son with the surrogate mother (Murdoch, 2014).

Following further media investigations, it was revealed that the Australian father in the case, David Farnell is a convicted sex offender who spent time in prison for sexually abusing young girls and Australian authorities were investigating into the welfare of Baby Gammy's sister. Several hundred thousand dollars was raised in funds to support Baby Gammy who became an Australian citizen in January 2015 and remains in the care of his surrogate mother (Hawley, 2015).

Reactions in Thailand: shutting down the 'baby factory'

The avalanche of horrific media reports, public outcry and international embarrassment over practices surrounding commercial surrogacy in Thailand forced the government to act. On 22 July 2014, the National Peace and Order Council (NPOC) (the military government formed following a coup d'état on 22 May 2014) announced a review of all 12 Thai IVF clinics involved in surrogacy cases believed to be possibly involved in breaches of the Thai Medical Council guidelines.

The next act of the NPOC was to revive the Assisted Reproductive Technologies Bill number 167/2553 that had been first approved by Cabinet in 2010. The legislation was due to be debated by the lower house of parliament, but never was because of continued political instability which eventually led to military intervention. A prolonged series of violent political protests over the ousting of the previous Thaksin government dominated political affairs and a number of pieces of proposed legislation were not debated during this time. When the military NPOC revived the bill, it was renamed 'The Protection of Children Born from Assisted Reproductive Technologies Act', a name which reflects the change in attitude towards assisted reproduction from regulation of technologies to protection against its harms and in particular was aimed at stopping the international trade. The legislation enforces a ban on commercial surrogacy or ova donation as well as non-medical sex selection and disallows intermediaries or brokers for surrogacy arrangements. It restricts the eligibility for surrogacy to heterosexual couples (at least one of whom must be Thai) who must have been married for at least two years. Surrogates must be female relatives of the couples requesting surrogacy. The Act was published in the Royal Gazette 1 May 2015 and took effect from 30 July 2015 (Bangkok Post, 2015a, 2015b). The passing of the legislation 'aims to stop Thai women's wombs from becoming the world's womb,' according to Wanlop Tankananurak, a member of Thailand's National Legislative Assembly quoted in the media (ABC News, 2015).

This legislation restricts the Thai cross-border surrogacy industry and any commercial arrangements, but has great significance in the ongoing ramifications of assisted reproduction to definitions of motherhood and kinship in Thailand. Although limiting surrogacy to altruistic arrangements involving female relatives of Thai couples, the new legislation contains measures from the 2010 draft that remove the ambiguity over the parentage of a child born of surrogacy arrangements. It provides that a child born through means permitted under the Act will be deemed to be the legitimate child of the commissioning parents, not the surrogate or other person who provided genetic material. Until this legislation, the woman who gave birth was legally recognized as the mother of the child leading to uncertainty for intended parents. This fundamentally changes the legal definition of motherhood from the birthing mother to privilege intending parents, reversing long-standing cultural and legal traditions that define kinship through gestation.

Conclusions

This paper has explored the development of assisted reproduction in Thailand: exploring how assisted reproduction became

Thai; but also how Thailand came to be associated with assisted reproduction; as an Asian 'baby factory' for foreigners. Thailand has had to reconcile the legacy of its success at IVF with the consequences of the rapid growth of an assisted reproduction industry.

The advent of assisted reproduction in Thai society had a number of effects. It challenged Thai conceptions of the family and reinforced notions of the importance of 'blood-lines' particularly among Sino-Thai. New ethical dilemmas arose as doctors developed the capabilities to create, freeze and destroy embryos or offered opportunities to screen and select to avoid genetic conditions and created public debates over professional ethics, social moral norms and personal decisions. Even as it provided the means for gay couples to form families, debates over IVF reinforced prejudices against homosexual couples and single women.

Beginning as a public-spirited venture situated within state-owned teaching hospitals, assisted reproduction eventually moved into the Thai private sector. As noted earlier, it is common for specialists to maintain both public and private practices. Given that treatments for infertility are not covered by public insurance, public hospitals directly compete with private hospitals for staff, patients and prestige. The loose regulatory regime for assisted technologies in Thailand and the advent of more restrictive regulatory regimes elsewhere created opportunities for entrepreneurial niches which saw the growth of clinics targeting the international trade in assisted reproductive services and medical facilitation companies offering to broker international surrogacies.

Just as assisted reproductive technologies were becoming more widely understood and acceptable in Thai society, a range of legal controversies have tarnished their image and 'de-naturalised' the technologies; re-stigmatising their use as something potentially unethical or questionable. The revelations involving high-profile doctors and their private clinics revealed to be in breach of Thai Medical Council guidelines by being involved in commercial ova donation, non-medical sex selection and commercial surrogacy eroded the early image of doctors as skilled, benevolent and altruistic – as trustworthy for the ethical management of life (Prasert, 2014). These cases exposed the realities of the economic rationalities governing people's uneven access to treatment for infertility and economic disparities fundamental to Thai society – the fact that money was the critical culture medium making reproduction possible. The issue of the commodification of the industry and the potential exploitation of women's bodies in revelations about commercial surrogacy and ova donation triggered distress in a society already acutely sensitive about the presence of a large sex trade for foreigners. More than anything, these technologies have revealed the contradictions in Thai society, the differences between the public face and what may be done privately. They have also reversed the early associations of Thai IVF as a social good associated with modernity, revealing the exploitative downside of an assisted reproductive technology market that takes advantage of countries with little or no regulation in place.

A consistent theme throughout the history of assisted reproduction in Thailand is its association with nationalist discourse, whether valorising the technical skill of Thai scientists in competition with other parts of Asia, or in the reassertion of Thai values in the face of corrupt 'Western' commodification or the colonisation of Thai women's bodies

through surrogacy. The passing of the restrictions on the surrogacy industry asserted the NPOC emphasis upon 'Thai values' and also reflected ongoing nationalist concerns with Thai women's bodies as symbolic boundaries of the Thai state. It is a history that has celebrated with national pride and wonder the birth of Baby Mung Ming and with dismay and shame the story of Baby Gammy.

The histories of assisted reproduction across the world demonstrate how different societies encounter, embrace or reject various ways of doing and using assisted reproduction – they deny the universality of normative ethical claims and demonstrate local specificities. There is no single history of IVF in Thailand, it is a story of shifting and divergent exercises of power, politics, competing claims and entanglements with other social transformations. At stake is the remaking of reproduction as a process and the remaking of Thai society.

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