

科技部補助專題研究計畫成果報告 期末報告

非醫療因素冷凍卵子之法律與生命倫理議題研究（重點代號
：A03）

計畫類別：個別型計畫
計畫編號：MOST 103-2629-H-007-001-
執行期間：103年08月01日至104年10月31日
執行單位：國立清華大學科技法律研究所

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報告附件：出席國際會議研究心得報告及發表論文

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中華民國 105 年 01 月 27 日

中文摘要：伴隨經濟發展和文化的變遷，現代社會女性於各領域所受到的差別待遇逐漸減少，而可更加自由地追求教育及職業方面的目標，然而由於懷孕、生產、育兒皆需耗費高昂的時間和經濟成本，相較於男性而言，女性在其職涯生活與生育的抉擇之間更為困難。

冷凍卵子技術的發展，提供女性一種全新的生育自主實踐方式，除了早期係基於醫療因素冷凍卵子的目的，如需接受化療或放射治療的患者，避免其生殖細胞不受療程所用之藥物或放射線影響以外，亦有越來越多女性基於自我的生涯規劃、個人偏好等，希望能夠冷凍自己卵子以供將來使用。是故，「自主卵子冷凍」的正當性即為本文討論之內容。

本研究針對自主卵子冷凍所面臨的倫理與法律議題加以分析。倫理議題上，本文區分為科學層面、道德層面以及社會層面。在科學層面，本文著重女性進行卵子冷凍時的健康安全以及成效、對於未來子女的健康產生之影響；道德層面，則探討自主卵子冷凍是否可作為女性生育計畫的一種選擇；在社會層面，則聚焦於允許卵子冷凍後對社會的影響為何，包括人口變化、文化態度的轉變等。

其次，在法律議題上，本研究探討允許自主卵子冷凍的相關政策規範，例如各國在法規上的差異性及醫療疏失的責任。此外，卵子冷凍作為女性生育計畫的選項之一，為了賦與女性充分的自主決定，應使其充分知悉有關法律、醫學、社會層面的風險和利益，並健全相關之諮詢內容與程序。

中文關鍵詞：人工生殖、自主卵子冷凍、生育自主、知情同意

英文摘要：As the life style changed rapidly in the modern society, more and more women participate in higher education and job market. For these women, pursuing a career or academic achievement takes full commitment, and so does pregnancy and child rearing. Consequently, compared to men, women are facing very different situations regarding to career and birth plan. Against this background, “egg cryopreservation” is receiving more attention than ever.

In the past, egg cryopreservation is a technology meant for only certain patients, such as those who will undergo radiation therapy, to preserve healthy eggs for future use of reproduction. Unlike such cases, this research proposal focuses on egg cryopreservation without medical indications.

During the process of selective egg cryopreservation, issues of ethics and the law are closely examined. Regarding to ethics, perspective of technology, morality and society are the most important. First of all, the safety and efficiency of egg cryopreservation is the main

concern, along with its influences upon future children. Next, whether egg cryopreservation is justified as an option for women 's plan of reproduction is discussed. Finally, the impact of egg cryopreservation upon the society, including demographic and cultural changes, is assessed in this paper.

From the viewpoint of law, this paper studies and compares policies and regulations regarding to selective egg cryopreservation. This paper reaches the conclusion that, when egg cryopreservation becomes an option for women 's reproductive plan, women should be sufficiently informed of relevant risks and alternatives through consultation. Last but not least, a sound system of consultation to enable women to make informed decision should be established.

英文關鍵詞： Assisted Reproductive Technologies, Egg Cryopreservation, Reproductive Autonomy, Legal Regulations, Informed Consent

科技部補助專題研究計畫成果報告

(期中進度報告/期末報告)

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計畫參與人員：游雅婷、程文好

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中華民國105年01月

目錄

中文摘要.....	II
中文關鍵詞.....	II
Abstract.....	III
一、前言.....	1
二、研究目的與研究方法	1
三、文獻探討	2
四、結論與建議	4
六、自評報告	8
附錄一、研究成果論文	9

中文摘要

伴隨經濟發展和文化的變遷，現代社會女性於各領域所受到的差別待遇逐漸減少，而可更加自由地追求教育及職業方面的目標，然而由於懷孕、生產、育兒皆需耗費高昂的時間和經濟成本，相較於男性而言，女性在其職涯生活與生育的抉擇之間更為困難。

冷凍卵子技術的發展，提供女性一種全新的生育自主實踐方式，除了早期係基於醫療因素冷凍卵子的目的，如需接受化療或放射治療的患者，避免其生殖細胞不受療程所用之藥物或放射線影響以外，亦有越來越多女性基於自我的生涯規劃、個人偏好等，希望能夠冷凍自己卵子以供將來使用。是故，「自主卵子冷凍」的正當性即為本文討論之內容。

本研究針對自主卵子冷凍所面臨的倫理與法律議題加以分析。倫理議題上，本文區分為科學層面、道德層面以及社會層面。在科學層面，本文著重女性進行卵子冷凍時的健康安全以及成效、對於未來子女的健康產生之影響；道德層面，則探討自主卵子冷凍是否可作為女性生育計畫的一種選擇；在社會層面，聚焦於允許卵子冷凍後對社會的影響為何，包括人口變化、文化態度的轉變等。

其次，在法律議題上，本研究探討允許自主卵子冷凍後的相關政策規範，例如各國在法規上的差異性及醫療疏失的責任。此外，卵子冷凍作為女性生育計畫的選項之一，為了賦與女性充分的自主決定，應使其充分知悉有關法律、醫學、社會層面的風險和利益，並健全相關之諮詢內容與程序。

中文關鍵詞

人工生殖、自主卵子冷凍、生育自主、知情同意

Abstract

As the life style changed rapidly in the modern society, more and more women participate in higher education and job market. For these women, pursuing a career or academic achievement takes full commitment, and so does pregnancy and child rearing. Consequently, compared to men, women are facing very different situations regarding to career and birth plan. Against this background, "egg cryopreservation" is receiving more attention than ever.

In the past, egg cryopreservation is a technology meant for only certain patients, such as those who will undergo radiation therapy, to preserve healthy eggs for future use of reproduction. Unlike such cases, this research proposal focuses on egg cryopreservation without medical indications.

During the process of selective egg cryopreservation, issues of ethics and the law are closely examined. Regarding to ethics, perspective of technology, morality and society are the most important. First of all, the safety and efficiency of egg cryopreservation is the main concern, along with its influences upon future children. Next, whether egg cryopreservation is justified as an option for women's plan of reproduction is discussed. Finally, the impact of egg cryopreservation upon the society, including demographic and cultural changes, is assessed in this paper.

From the viewpoint of law, this paper studies and compares policies and regulations regarding to selective egg cryopreservation. This paper reaches the conclusion that, when egg cryopreservation becomes an option for women's reproductive plan, women should be sufficiently informed of relevant risks and alternatives through consultation. Last but not least, a sound system of consultation to enable women to make informed decision should be established.

Key Words: Assisted Reproductive Technologies, Egg Cryopreservation, Reproductive Autonomy, Legal Regulations, Informed Consent

一、前言

近年來，隨著人工生殖科技大幅進步，基因學和遺傳學領域也有所突破，許多過去認為不可能達到的想像，如今已成為常態。然而，儘管醫藥科技向前邁進，女性的自然生育能力仍受限於自然之生理機制，如更年期女性在懷孕生育上即不再如青壯年女性具有優勢。此種限制不僅僅只是區分出女性和男性不同之處，也反映在生涯與生育規劃的安排上。現今社會中，伴隨價值觀的改變，差別待遇的逐漸消弭，吸引女性積極於青壯年時期投入高等教育及職場，但由於懷孕生產以及育養兒女的生理影響，相較於男性，女性在爭取教育、工作機會以及追求學術或職業成就時也必須面臨相當困難的抉擇。

然而，「冷凍卵子」此一技術提供女性另一種途徑，讓女性能夠及早保存自己的健康卵子，專注投入職場工作或追求其他目標，再於其認為已可生育子女的適當階段時以人工生殖方式受孕。冷凍卵子技術使得女性在實踐生育自主上有更大空間，究竟要如何看待自主冷凍卵子、應如何使用此種技術，以及其對倫理與社會的衝擊或改變為何，應放置在整個社會環境、經濟變遷的背景下來進行討論。

肯定女性身體自主的前提下，不論是因為醫藥原因亦或自主選擇，冷凍卵子似不應受到太嚴格的限制，以英國為例，其允許符合HFEA（Human Fertilisation and Embryology Authority）標準並領有執照的診所進行卵子冷凍，此外診所亦可提供三十五歲以下的女性透過捐贈一部分卵子給受術者，換取診所免費儲存剩餘卵子的服務。檢視我國，冷凍卵子雖為合法行為，然而當單身女性期望能解凍卵子以透過人工生殖技術受孕時，卻無法符合人工生殖法實行主體須為夫妻的要件，此時單身女性即無法實踐其生育自主。

另外，相較於非侵入性的冷凍精子過程，取卵手術為一侵入性之醫療行為，必須注射人類絨毛膜促性腺激素（hCG）等激素或藥劑促進卵細胞快速成熟，可能造成女性卵巢過度刺激症候群（OHSS）、出血、感染甚至死亡。女性進行冷凍卵子必須負擔相當大的金錢成本、健康風險、心理負擔等，基於何種脈絡下會選擇冷凍卵子，也是本研究所關心的議題。

二、研究目的與研究方法

人工生殖技術的發展，為我們帶來更多生育的態樣、打破舊有的觀念，其蓬勃也促進了男性與女性間之平等。然而，社會上對於此種技術並非毫無爭議，反對者認為其違反人類的正常生理限制、摧毀典型家庭的圖像、造成女性身體商品化等，本研究計畫目的在於比較及觀察我國與他國的冷凍卵子規範，結合我國社會背景和價值觀，自女性生育自主之觀點進行倫理與法律分析，反省現行法制之不足，以及提供未來法規政策修正方向之建議。

本研究計畫所採行之研究方式為文獻分析法、比較法。本研究先以**文獻分析**

為始，研讀探討國內外的女性主義法學、醫療、人工生殖與法律重要文本，探討冷凍卵子在女性生育自主中所扮演之角色、其發展對性別平等之影響，以及釐清此種技術在社會價值觀、商業市場下之運作會產生何種結果。

其次，由於不同國家於社會背景、經濟狀況、文化觀有所差異，對於卵子冷凍技術的態度與規範並不完全一致，目前，自主卵子冷凍在美國數個州內以及歐陸的英國、比利時、荷蘭等國為合法可用的技術，以色列亦在近年內改變其立場，基於預防醫學之角度允許施行自主卵子冷凍，鄰近之新加坡規範則與我國類似，雖然肯認卵子冷凍之合法性，但若受術者不符合人工生殖法規之主體，仍會面臨解凍後無法使用卵子的情形。

在全球化浪潮下，女性可選擇透過旅行方式到管制較寬鬆之國家進行冷凍卵子及人工生殖，各國規範差異性也成為觀察人工生殖發展之重要面向，本研究主要以比較法研究作為研究主軸，探討不同法域關於冷凍卵子以及後續程序的規範，再回頭檢視我國現行法規和政策發展方向進行比較。

三、文獻探討

卵子冷凍在我國社會中雖然逐漸受到注意，但受限於不普及、高成本等，實際應用尚不廣泛，對其直接加以規範的法規或政策亦不多，目前國內外有關冷凍卵子的法律、社會學、倫理學等研究尚未成為主流，然而，在人工生殖技術相關的研究之中，仍然可以探出對於冷凍卵子進行研究時可資參照的脈絡。以下就國內外的相關文獻作一回顧探討。

生理女性在近用生殖科技時所需承受的負擔和外界期待都和生理男性大不相同。女性隨著邁入更年期，其卵巢產生之卵子在數目及品質都會明顯降低，受限於生理機制，女性並不被鼓勵不以結婚生子為優先選項的其他生活方式。相反的，男性經常將其生育時間延遲到四十歲後，卻很少受到譴責，有時甚至被鼓勵應當如此，是故，相較於女性進行卵子冷凍，男性往往被允許能夠在年歲較大時透過冷凍精子施行IVF手術孕育兒女。Harwood, K (2009) 認為科技的進步並未帶來平等，卵子冷凍的技術並未改變女性和男性因為生理上不同而產生的不平等社會結構。人工生殖技術對女性反而產生一種壓力，迫使女性必須把握這種醫學上的機會進行生育，而無助於對抗社會譴責不欲生育的女性的聲浪 (Neyer, G & Bernardi, L, 2001)。本研究認為，當我們肯認應該要促進平等時，並不非常清楚人工生殖技術對女性而言是否提供了更多選擇，其究竟是解決性別不平等的方法或者本身即為一種性別不平等，必須視個案而定，從女性生活的其他層面如教育、職場等去探討性別平等，可能是對社會變革更有意義的。

另外，選擇接受冷凍卵子這類「保存生殖能力 (fertility preservation)」生

殖科技者，其生育決策都受到性別、經濟、甚或種族等社會因素影響（Dorothy Roberts, 2012）。Benzies等人（Benzies, K., Tough, S., Tofflemife, K., Frick, C., Faber, A. & Newburn-Cook, C., 2006）在其調查中指出女性進行冷凍卵子時考慮之因素，包括對教育和工作的追求、缺乏合適伴侶、不急於進入母職等，此些理由顯示出女性希望能夠決定在哪個時間點最適合成為一位母親，此種想法如同一般家庭的計劃生育，人們對於何時、如何擁有子女有其偏好。進一步而言，此種對生育的偏好是否可成為為冷凍卵子的理由？本研究認為，反對自主冷凍卵子者主張其超出了女性在懷孕上的控制權，將冷凍卵子描述為一種利己且以自我為中心為偏好的方式，然而反對者忽略了女性之所以延後生育，在於背後的社會環境及經濟因素。冷凍卵子提供女性一種機會，給予女性追求其他更為重要的目標，而不用面對生殖系統的自然限制，透過分析女性在何種脈絡之下能夠選擇、決定選擇自主卵子冷凍，可以對於女性生育自主及生育決策有更為細緻的瞭解（June Carbone & Naomi Cahn, 2013）。

承前所述之生育自主，本研究亦關注選擇卵子冷凍者的年齡影響。不同年齡層在冷凍卵子的效果上會有所不同，三十歲年齡層相較於二十歲年齡層，在懷孕以及生育成功率明顯較低，冷凍卵子的最大挑戰即在於如何確保此程序能夠被獲益最大，也就是卵母細胞尚未老化的女性使用（Mertes, H. & Pennings, G., 2011）。本研究主張，可分為資訊告知及年齡限制兩部分。以前者而言，應對有意願進行冷凍卵子的女性告知理想的時間點，然而即便進行告知，實際上仍無法確定哪些年紀的女性會進行冷凍卵子，一方面風險和成本的說明對許多人來說可能不具有說服力，另一方面，不論是由醫院建議或是納入公共健康教育計畫的一環，都可能會被反對者認為相當於是在鼓勵冷凍卵子的行為。不過告知優點在於透過告知潛在的使用者利益及風險，也可能會帶來勸阻的效果；此外，除了相關資訊的告知，在年齡部分也可由法規政策進行限制，除了基於上開理由，亦可避免二十幾歲的年輕女性承受不必要的風險和花費，以以色列為例，便規定只有三十到四十歲的女性可進行自主冷凍卵子。

冷凍卵子的另一顧慮為商品化及商業化。越來越多醫療手術、藥物並非以治療實際的症狀為目的，而是為了實現患者不合理，甚至不道德的要求，創造潛在的剝削性市場，使得社會過度商業化變成以商業利益為導向，而缺乏關注健康或社會問題之可能。Winston（2002）指出，受術者渴望擁有自己的孩子、醫療診所希望成為人工生殖領域的領導者、商業利益的貪婪，會使不孕治療成為一種潛在的危害。Sandel（2012）亦認為，商品化的問題在於其不平等，在一個美好的生活要素上設定價格或許會破壞或排擠值得人類在意的非市場價值及態度。經濟市場上，如果沒有足夠金錢，即不能獲得該商品，然而當健康被視為一種權利而非一種購買條件，一旦成為如奢侈品只有少數的人能夠負擔

時，便會影響一個人在社會上生活的基本權利。本研究認為，相關政策規範可適時介入控制誰有權得以近用。可採取的方式如全面禁止，但富裕者仍可透過跨國流動取得此種權利，故此種方式並無法促進實質之平等；另一種方式則為政府保障所有女性都擁有近用此技術的權利，不過其涉及的健康議題相對廣泛，加上社會上尚存在其他更亟待政府援助之處，冷凍卵子並不適宜作為一種福利措施。排除上述兩種政策方向，相對較可行的即為個人自行負擔金錢支出以購買卵子冷凍的服務，透過嚴格的管制，或許可使得生殖產業不會被強勢的社群價值所阻擋，並避免走向消費主義的道路。

允許冷凍卵子對人口變化之影響，係社會關注的一大問題。關於總生育率的下降，新加坡一份報告指出，高教育程度的女性通常孕育較少子女，高識字率及高教育程度使女性擁有更多關於避孕的知識，掌握更大的自主權避免計畫以外的生育帶來的高額成本。(Lutz, W & Samir, S.,2011) Cooke (2012) 認為，雖然政府可以提供產假、育嬰假等福利，但仍不太能夠改變女性為了穩定及獨立性而選擇追求教育和職業的趨勢，女性需要權衡職業上的成就和延後生育所帶來的風險，才能做出其認為明智的選擇。本研究認為，很多政策可以促使人們及早進行生育，一種方式即為禁止卵子冷凍，使得女性必須在追求工作成就和成為父母兩種強大渴望中作出選擇，然而教育和職業同樣對社會具有貢獻，如果允許自主冷凍卵子，應能促使女性及男性思考生育能力隨年紀下降的現象，同時並能鼓勵較早進行生育及組織家庭，提供更多生育的選擇性，讓不同需求得以同時並存，或許是更為妥適之方向。

四、結論與建議

本研究針對自主卵子冷凍過程中遭遇的倫理與法律兩個議題加以分析。倫理議題上，本文區分為科學層面、道德層面以及社會層面三類。就科學層面而言，基於激素的過度刺激和取卵手術之健康風險，在安全性以及成效上，研究支持冷凍相對較年輕者的卵子是較為可行的。本研究認為，並無充分證據顯示，卵子冷凍與其他人工生殖技術對子女健康產生之影響有所差異，不過仍建議醫療人員應踐行告知同意及諮詢之機制；道德方面，女性生育自主已被國際組織、公約所肯認，卵子冷凍不一定能夠改變性別不平等之情形，但卻能促使女性擁有選擇權，可以基於自身欲追求的目標、對自我的定位，而得以規劃在適當的生涯階段成為母親；社會層面部分，當個人的生育選擇成為一種社會趨勢時，會廣泛影響到人口政策以及文化上的態度，包括對於女性身體商品化的擔憂、醫學消費主義化、典型家庭圖像的轉變等，本研究認為，雖然無法確定容許卵子冷凍的政策會帶來何種結果，但應能促使女性在生育與追求教育和職業的目標間得以並存。

法律議題上，本文探討自主冷凍卵子之各國規範、醫療疏忽、告知同意、監督必要性等四個部分。於各國規範，不同國家對於卵子冷凍的政策寬嚴程度差異極大，以英國為例，符合Human Fertilisation and Embryology Authority

(HFEA) 標準並領有執照的診所可進行卵子冷凍，且提供三十五歲以下女性透過捐贈一部分卵子給受術者，換取診所免費儲存剩餘卵子的服務。然而，於新加坡之人工生殖技術只能實行於已結婚且不超過四十五歲之婦女，並須得到其丈夫之同意，此與我國現行法制面臨的情形相同，即冷凍卵子雖為合法，但若單身者解凍卵子後，仍無法透過IVF (*in vitro fertilisation*) 孕育子女以建立親子關係。各國間規範的差異性，在全球化下使得女性可能會流動至較不嚴格之國家進行人工生殖服務，而可能產生如何管制冷凍卵子之運輸等問題。

於醫療疏失部分，立法上一重要之考量便是提供冷凍卵子服務的診所應負擔何種責任。英國Yearworth案中，原告因診所管理不當而滅失保存之精子，法院將其喪失未來進行生育的可能性解釋為受到精神上損害而應獲得賠償，本研究認為此案例對於人工生殖機構因保存冷凍卵子不當之情形，亦應有其適用的空間。

於告知同意部分，為確保女性進行冷凍卵子前已了解潛在的利益、風險和技術之侷限，ASRM建議應告知之內容包括(1)取卵之風險(2)診所實際操作的數據和結果，如解凍後的卵母細胞、胚胎在移植過程中之活產率(3)相關費用(4)在有限的卵母細胞所進行之決定帶來的潛在風險等。本研究認為，除上述內容外，亦必須讓受術者清楚了解若與診所中止卵子保存的服務時，剩餘的卵子應如何處置。

於監督必要性部分，本研究認為，許多提供冷凍卵子服務的醫療機構在此種高技術性之程序上缺乏經驗和專業知識，故允許冷凍卵子時，亦有必要建立並確實執行執照核發及臨床實驗規範等。

對於冷凍卵子的法應關注之面向，包括女性的健康安全、身分認同，以及未來子女的健康及利益、性別平等及社會利益等。自政府監督管理的角度而言，不論是基於醫療因素或非醫療因素之冷凍卵子，都被囊括在人工生殖的範圍內，所涉及的除了與之息息相關的試管嬰兒等相關醫療規定，也必須廣泛考慮到社會背景、社會態度、生育政策以及複雜的倫理價值等。不論允許自主冷凍卵子與否，都會對其他管制政策產生連動效應，也因此，期望透過此份報告，提醒未來制定冷凍卵子法規政策時應經過審慎的科學、法律、社會評估及調查。

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六、自評報告

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現（簡要敘述成果是否有嚴重損及公共利益之發現）或其他有關價值等，作一綜合評估。
1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估 ■ 達成目標
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An Ethical Analysis of Human Elective Egg Freezing

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July 2013

July 2013

CENTRE FOR BIOMEDICAL ETHICS
NATIONAL UNIVERSITY OF SINGAPORE

OF HUMAN ELECTIVE EGG FREEZING

Benjamin Capps, Yun-Hsien Diana Lin and Voo Teck Chuan
With a Foreword by Ruth Chadwick

Contents

List of Abbreviations	3
Foreword	4
Executive Summary	8
Background to the Report	12
1. Introduction	13
2. The Ethics of Elective Egg Freezing	17
2.1 Getting the Terminology Right	17
2.1.1 <i>Defining Our Approach</i>	20
2.2 Scientific Arguments	22
2.3 Moral Arguments	27
2.3.1 <i>'Levelling the Reproductive Playing Field'</i>	28
2.3.2 <i>Ownership of Eggs</i>	29
2.3.3 <i>Elective Egg Freezing and Choice</i>	30
2.3.4 <i>Taking Stock</i>	33
2.4 Social Arguments	36
2.4.1 <i>Commercialisation and Commodification</i>	37
2.4.2 <i>Enhancement</i>	40
2.4.3 <i>The 'Ideal' Family Unit</i>	42
2.4.4 <i>What are the Social Benefits and Risks?</i>	44
3. Considerations if Allowing Elective Egg Freezing	49
3.1 Some Legal Issues	49
3.1.1 <i>Policy Variation</i>	49
3.1.2 <i>Oversight of Clinics</i>	50
3.1.3 <i>Informed Consent</i>	51
3.1.4 <i>The Requirement for Oversight</i>	52
3.2 Age and Elective Egg Freezing	53
3.3 Who should pay for Elective Egg Freezing?	55
4. Concluding Remarks	57

List of Abbreviations

ART	Assisted reproductive technologies
ASRM	Practice Committee of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology
BAC	Bioethics Advisory Committee (Singapore)
Belris	Bioethics Legal Group for Reproductive Issues in Singapore
CBmE	Centre for Biomedical Ethics (Singapore)
CEDAW	(United Nations) Convention on the Elimination of All Forms of Discrimination Against Women
ESHRE	European Society of Human Reproduction and Embryology Task Force on Ethics and Law
HFEA	Human Fertilisation and Embryology Authority (UK)
INBC	Israel National Bioethics Council
ICSI	Intracytoplasmic sperm injection
IVF	<i>In vitro</i> fertilisation
OHS(S)	Ovarian hyperstimulation (syndrome)
TFR	Total fertility rate
WHO	World Health Organisation

Foreword

It is a pleasure to write a Foreword to this very interesting and thoughtful report. In this short piece I propose to address three main topics of relevance to the debate: biological limits; social change; and social solutions.

Biological Limits

Since the birth of the first baby using IVF, there have been remarkable advances in the techniques of artificial reproduction and in the fields of genetics and genomics. Situations that were once regarded as at the boundaries of what was possible have now come to seem normal. And yet one thing appears to remain constant: the ticking of the biological clock for women puts time limits on their fertility. This seems to be one respect in which women are not only different from men, but different in a way that can set boundaries to the flexibility they have in planning their lives to include both career and reproduction.

It is conceivable, however, that this will not always be the case. The process of evolution continues, whether we are aware of it or not, and it has been argued that the menopause has outlived its evolutionary usefulness. If so it may eventually disappear.

The evolutionary explanation of menopause has been said to be as follows. In a situation where females start reproducing as teenagers, and are still living with their mothers, it could be disadvantageous if the mother still had the potential to have children who would be in competition for resources with her grandchildren. The importance of grandmothers to raising children is still a widespread phenomenon.

Biology may set limits to what is socially feasible, but changes in social arrangements can also affect biology in the long term. When social arrangements are such that women reproduce later, menopause is no longer an advantage in the way described, and so may disappear. As things stand, it actually confers health risks such as osteoporosis.

Such an evolutionary change is clearly not on the horizon at present. Those who advocate human intervention to 'enhance' aspects of the human species might argue that we should look for ways to speed up this process artificially, but the prospects for enhancement are themselves subject to vigorous ethical debate and there are no clear options for action in this

direction. What *is* possible is to find ways, given the current situation, of maximizing women's fertility, by protecting the quality and supply of her eggs. Egg freezing offers a way of doing this.

Social Change

This report takes for granted the biological status quo as we currently understand it – the current situation for women in relation to the supply of eggs and the time span available for reproduction. The questions to be asked, and addressed admirably here, are how should the new possibilities of egg freezing be regarded, how should they be used, and what are the ethical and social implications?

How we approach these issues has to be understood in the context of a time of significant demographic, social and economic change across the globe. Lifespans are increasing, which in some countries is giving rise to challenges about pensions. In light of a longer life span, however, it becomes less obvious that reproduction is best done at an early age, as long as safety considerations are observed. In an article in *Newsweek* as long ago as 1994 the American bioethicist Art Caplan mused on the possibility that reproduction could someday be something people could postpone for retirement.

Alongside these developments, however, some things remain disappointingly slow to change. Despite the advances made in women's positions in a number of areas and contexts in the second half of the twentieth century, at the present time we see in several different situations in the world where women remain subject to many restrictions and limitations, particularly in terms of opportunities for education and careers. It is important for social advance that women are free to contribute to society – as mothers, yes, but also as members of different professions and careers. Where technology can safely contribute to this end, this should be applauded.

The hallmark of an ethical issue is usually an actual or a potential conflict of interests. Some situations amount to a zero sum game: satisfying the interests of one group has the inevitable consequence that everyone else loses out. A balanced 'win-win' approach could however be taken in considering the issue of egg freezing.

Social Solutions

There are different scenarios to consider. Where a woman wants to freeze her eggs for medical reasons, because she is undergoing some treatment that may damage them, this is the least controversial option and is clearly in the interests of herself, her present or future partner and children.

A particular society might decide that it wants to have a policy of leaving it at that – allowing access to the technology only for a narrowly defined category of medical reasons. But if it is the case that reproducing with biologically young eggs is the safest as regards egg quality, then at the opposite extreme it might be argued that it should be standard to freeze a woman's eggs so that reproduction can be timed optimally from a biological point of view (at least as far as the eggs are concerned). So this type of policy could also be regarded as being based on medical considerations, but more broadly understood than the first policy.

What is left out in these two extremes so far is first, the importance of environment, and second, the significance of individual choice. The environment into which a child is brought is clearly of the utmost importance, and if women are reproducing before they have the resources or the right partner then that is potentially a disadvantage as well.

With regard to individual choice, this report shows that there are important considerations concerning a woman's identity. When an individual makes a choice, he or she should not necessarily be regarded as a utility maximiser, doing what he or she thinks is in their best interests (to the possible selfish disregard of everything else). We make choices which reflect the sort of person we believe ourselves to be, which includes our values. A woman may be in a situation where she has not found a suitable partner but is aware that her biological clock is ticking away and with it the greater risk of diminishing fertility and/or inferior quality in her eggs. Alternatively she might wish to postpone reproduction because she wishes to achieve other things in life first, whether or not she has already found a partner with whom she wishes to have children.

The question is, whether the reasons a woman might have for wanting to freeze her eggs should be questioned and evaluated. If it is acceptable when she is undergoing chemotherapy, then why not in the other cases? This report here rightly points out that the interests of

women in pursuing a career and therefore wishing to postpone reproduction are not necessarily in tension with other interests: the stereotype of the career woman versus the mother and homemaker belongs to another era.

There may be residual objections to the technical fix in the area of reproduction, but societies around the world have already embraced technology in this as in many other areas of their lives, and it is important that this technology is one that contributes to levelling the playing field between men and women. Technological advance and social advance go hand in hand – technological advance leads us to see things in different ways and even challenges our understanding of particular concepts. The word ‘parent’ no longer means the same as it did before the advent of reproductive technology. It is for society to try to maximize the social benefit from these developments. This report has done an excellent job of showing how the current advances in egg freezing technology could be embraced to facilitate social good, without detriment to other significant social interests.

Ruth Chadwick

Distinguished Research Professor at Cardiff University and Director of ESRC Centre for Ethical and Social Aspects of Genomics and Epigenetics; July 2013

Executive Summary

This report considers the ethics of *elective* egg freezing: the intention for a woman to store eggs from her own body to use for conception at a later time.

Egg freezing has become a popular medical and social topic. It is a procedure developed from IVF treatment and used to store eggs when they are not needed in a fertility cycle. It is also used when a woman's reproductive health is at risk from some underlying condition or clinical treatment, for example the cytotoxic effects of radiotherapy. The renewed debate, however, is partly because of two reports that discussed extending its application to *elective* purposes: the American Society for Reproductive Medicine (ASRM)¹ and the European Society of Human Reproduction and Embryology (ESHRE).²

The ethical grounding of judgements relating to policy in this area needs to be canvassed. The crucial questions are whether access to egg freezing is a matter of personal choice, and whether it should be restricted by governmental policy. While there is a strong case for respecting basic reproductive freedom for all women, there are the social determinants that each society defines as to the limits of this freedom and in respect of legitimate family planning options. Further policy issues concern whether use of these procedures should be restricted to certain kinds of relationships (including any related requirements for financial or social stability); and 'who pays?'

It is important to note that there are inherent risks to women who undergo the egg retrieval procedure, such as ovarian hyperstimulation syndrome (OHSS), bleeding, infection, and possibly death.³ Furthermore, there are limited data on how the procedure affects conception, pregnancy and perinatal outcomes, or whether it has long-term effect on children born. These risks are a substantial factor in the ethics of elective egg freezing (as discussed in section 2.2). Although we summarise the current clinical data and cite some key references, we

¹ Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology (ASRM). 2012. Mature oocyte cryopreservation: a guideline. *Fertility and Sterility* 99: 37-43.

² European Society of Human Reproduction and Embryology (ESHRE) Task Force on Ethics and Law, including, Dondorp, W., de Wert, G., Pennings, G., Shenfield, F., Devroey, P., Tarlatzis, B., Barri, P. and Diedrich, K. 2012. Oocyte Cryopreservation for age-related fertility loss. *Human Reproduction* 27: 1231–1237.

³ Also see: Bioethics Advisory Committee (BAC). 2008. *Donation of human eggs for research. A Report by the Bioethics Advisory Committee*. Singapore. BAC. November.

recommend that the reader consult the expert reports of ASRM and ESHRE for a detailed clinical analysis.

Beyond these scientific questions, however, elective egg freezing raises further ethical issues. For example, there is evidence that eggs frozen from a woman at a younger age have a higher chance of successful birth if then used to conceive later in life. This raises a number of issues: the safety and health issues previously mentioned in respect of young, healthy women potentially undergoing the procedure, but also the efficacy of when eggs are extracted and the risks of long term storage. But perhaps the most contentious issue is why a woman would want to choose to freeze her eggs. Some people want to delay having children for career or other reasons; for them, egg freezing would be used as a family planning tool. Others think that egg freezing would discourage people from having children, and risks them putting it off until it is too late (and therefore risk the lottery of *in vitro* fertilisation – IVF – treatment). It therefore represents a ‘false promise’ of preserving fertility – it is well known that IVF is a relatively inefficient procedure. Finally, there are also important issues about whether the procedure should be generally available and under what controls – these raise issues of law and policy and how they can influence social patterns.

The normative analyses in this report are demonstrated via three dimensions:

(1) The scientific arguments: In terms of safety and efficacy, freezing of relatively ‘young’ eggs is generally supported by research conducted primarily by fertility centres. The reasons for proceeding with caution are the significant health risks posed to women undergoing the procedures of hormonal hyperstimulation and surgical removal of the maturing eggs. Although this report finds no evidential difference between established ARTs (such as IVF) and elective egg freezing, mechanisms of informed consent and counselling for individual cases are recommended.

(2) The moral arguments: Reproductive autonomy and health for women are affirmed by international organisations and conventions such as the World Health Organisation (WHO) and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Although elective egg freezing may not alter the situation of gender inequality, and may be subject to regulation, it could promote women’s choice-making, options and plans to become mothers according to their life circumstances, goals, and sense of identity and self-fulfilment. With sufficient information about clinical risks, and social and ethical

costs, this report suggests that women providing informed consent should, in principle, be granted access to elective egg freezing as it is a means to live out their reproductive autonomy.

(3) The social arguments: When individual reproductive choices are factored into a social trend, there are wide implications on population policies and cultural attitudes. Concerns on the legalisation of elective egg freezing include the commodification of women's bodies, a consumerist approach to medicine, and the changing image of an 'ideal' family. This report opines that although it is not realistic to predetermine the social outcomes of policies allowing egg freezing, it is possible women will be able to synchronise childbearing with their plans for education and careers and that potentially coexist with social models.

Singapore is just one country that is looking at the broad ethical and social implications of elective egg freezing, and this report is relevant not only to Singapore, but should inform the ethical debates on reproductive policies in other developed countries. Thus while we draw attention to the relevance for Singapore's policies, we are more interested in the general ethics of egg freezing policies, and we refer to other jurisdictions throughout.

Several jurisdictions including the United States of America, the United Kingdom, Belgium and the Netherlands permit elective egg freezing. The Israeli government has recently, as a matter of policy, determined age-related fertility decline to be a medical condition and defined elective egg freezing as 'preventive medicine'. In Singapore, only women who might lose their fertility through medical treatments such as chemotherapy are allowed to undergo the procedure. In addition, only women who are already married, under 45 years old, and already undergoing IVF for infertility purposes are allowed to freeze their eggs.⁴ Elective egg freezing is not allowed.⁵ In contrast, the procedure is unregulated in Thailand and Malaysia, two neighbouring countries in South East Asia.⁶ These differences in governance can lead to regional disparity in the provision of health-related practices. We may find that prohibitions

⁴ *Licensing Terms and Conditions on Assisted Reproduction Services Imposed Under Section 6(5) of the Private Hospitals and Medical Clinics Act (CAP 248).*

⁵ Parliament of Singapore. 2012. *Singapore Parliament Reports (Hansard)*. No 12, session 1, Vol. 89; date 14.11.2012. 'Age-Related Fertility Decline'.

⁶ And for the reason that this is principally an ethical analysis, these countries' policies or lack thereof are not discussed further in this report. We also limit our following discussion to examples of countries in which egg freezing and IVF are going to be featured as *enabling* fertility. In other countries, sometimes because of cultural reasons, but often because of their developing status, fertility treatments are often going to take a back seat to strategies to control overpopulation. They may still be offered as services in such countries, but often only available to a minority affluent group.

in one jurisdiction simply force people into more permissive ones – this is one basis of ‘reproductive tourism’.

In this report, the reader will find a normative analysis of the issues of elective egg freezing. We separate these into ‘Moral’ and ‘Social’ considerations (Section 2.3 & 2.4). The analysis is based on up to date clinical and health evidence, although this is subject to change in a rapidly advancing field (summarised in Section 2.2). Legislations, case law and guidelines in various jurisdictions are drawn upon to consider possible regulation in issues of reproductive tourism, the liability of clinics, the essential elements of informed consent, and possible age restrictions (section 3). It is suggested that licensing and good clinical practice frameworks should be established and enforced. The report concludes that future egg freezing policies ought to address safety, welfare, and identity issues of women, the health and welfare of future generations, equality issues, and social advantage all at the same time. At a time when policies on egg freezing are being widely evaluated, it is important to understand the various arguments being made for the expanded use of the technology. We hope to lend clarity to the debate by elucidating the reasons for wanting to freeze eggs beyond those who need the technology because of clinical indications.

Background to this Report

The Report was supported by the generosity of a gift from Belris: Bioethics Legal Group for Reproductive Issues in Singapore.⁷ Belris is “is an independent, non-profit group dedicated to promoting collaborative dialogue in the area of reproductive treatments and technologies in Singapore.”⁸

The gift was made to the Centre for Biomedical Ethics (CBmE), which agreed to undertake the research, coordinated by the Principal Investigator, Benjamin Capps and Lead Researcher, Voo Teck Chuan. These two are the main authors of the report. Yun-Hsien Diana Lin was invited to join the writing group because of her expertise in the area. Ruth Chadwick was appointed as an external expert, and we are grateful for her insightful comments on the draft report and contributing the Foreword. We would also like to acknowledge critiques provided by Alastair V. Campbell, Jacqueline Chin, Calvin Ho, Tamra Lysaght, Paul Macneill and Lisbeth W. Nielsen on earlier drafts of the Report, and the research assistance of Farhan M. Idris. Any mistakes are the responsibility of the authors.

⁷ At the same time as supporting this report, BELRIS also engaged ClearState (<http://www.clearstate.com/>) to conduct a consultation in the region to glean insights from key informants and stakeholders, and to obtain data from clinics where appropriate. The ClearState study identifies opinions and demographic trends in Singapore, which we refer to in this report. Neither the authors nor CBmE provided ethics support for the ClearState Report, and was not linked in any way with the preparation or performance of the study. The report is available at: http://www.belris.sg/index.php?option=com_content&view=article&id=7&Itemid=111. Hereafter, the report is referred to as ClearState.

⁸ <http://www.belris.sg/>

An Ethical Analysis of Human Elective Egg Freezing

Benjamin Capps, Yun-Hsien Diana Lin, and Voo Teck Chuan

1. Introduction

Oocyte cryopreservation or egg freezing is a technique used to store eggs at sub-zero temperatures. It was first used in a successful human pregnancy in 1986.⁹ Since then, technologies have been improved and newly developed. For example, rapid (vitrification) freezing and better clinical techniques have resulted in improved oocyte survival, fertilisation, and pregnancy rates from frozen-thawed oocytes in *in vitro* fertilisation (IVF) treatment.¹⁰ It is thought that to date there have been a few thousand babies born using frozen stored eggs worldwide.¹¹

Although natural decline in fertility is expected with increasing age, there can also be biological and genetic factors that can affect fertility. Circumstances such as illness may determine if, and the options of when and how, a woman can conceive. The advent of effective contraception has also enabled women to control the time when they conceive. However, the choice to, or circumstances that delay pregnancy, can have a detrimental effect on the ability to conceive later.¹² During the life of a woman, ovarian ageing occurs through

⁹ Chen, C. 1986. Pregnancy after human oocyte cryopreservation. *Lancet* 1: 884-886.

¹⁰ Two papers note that success rates in IVF are comparable to pregnancies using frozen embryos and fresh eggs: Grifo, J. and Noyes, N. 2010. Delivery rate using cryopreserved oocytes is comparable to conventional in vitro fertilization using fresh oocytes: potential fertility preservation for female cancer patients. *Fertility and Sterility* 93:391-396; and Jain, J. and Paulson, R. 2006. Oocyte cryopreservation. *Fertility and Sterility* 86: 1037-1046.

¹¹ This includes for all purposes, although no one is apparently keeping a systematic count. Alternatives to egg freezing include egg donation and egg sharing. Ovarian tissue and ovary cryopreservation are also possible, but they are unlikely to be used for anything but clinical reasons; more than 30 transplantations of cryopreserved ovarian tissue have been reported and six healthy babies born after ovarian tissue cryopreservation and subsequent transplantation. The transplantation of a whole ovary with vascular re-connection has also been successfully attempted.

¹² Key points in this document are underlined. Gosden, R., Tan, S. and Oktay, K. 2000. Oocytes for late starters and posterity: are we on to something good or bad? *Fertility and Sterility* 74: 1057–1058; Leridon, H. 2004. Can assisted reproduction technology compensate for the natural decline in fertility with age? A model assessment. *Human Reproduction* 19: 1548–1553; Lobo, R. 2005. Potential options for preservation of fertility in women. *New England Journal of Medicine* 353: 64–73; and Te Velde, E., Habbema, D., Leridon, H. and Eijkemans, M.

the gradual decreasing numbers of follicles coinciding with diminished quality of eggs, which may – as ageing ultimately will – lead to clinical infertility. At around 30 years of age, fertility normally begins to decrease, then steadily declines up to a point of accelerated deterioration.¹³

Egg freezing, therefore, is an option to preserve eggs outside the body at an optimal state. However, this comes with certain risks of the procedure itself, and the currently unknown future health implications for the woman and any resulting child. Although there are data from IVF treatments on the health of women who undergo the various procedures to collect their eggs, there are less data on how egg freezing affects perinatal outcomes, such as the success rate of conception and pregnancy, or whether it has long-term effect on children born. There are also obstetric and neonatal risks which increase as the woman's age increases. Egg freezing also relies on later turning to IVF treatment, which results in only modest numbers of successful pregnancies.¹⁴

Some couples, who prefer not to freeze embryos that are not implanted during IVF treatment, may prefer to freeze the eggs instead of creating supernumerary embryos as a morally or religiously preferable option. Other reasons can be categorised as *clinically-indicated reasons* and *elective reasons*. In the first case, egg freezing may be used by women to preserve their fertility before undergoing therapy which impairs or may impair their reproductive health, for example, recurrent ovarian surgery for benign disease; prophylactic oophorectomy in women with BRCA (genetic) mutations;¹⁵ and cancer treatment by chemotherapy. Cancer care is now leading to ever more better outcomes, and therefore more women may want to consider and have the opportunity to conceive in the future.¹⁶

2012. The effect of postponement of first motherhood on permanent involuntary childlessness and total fertility rate in six European countries since the 1970s. *Human Reproduction* 27: 1179-1183.

¹³ ESHRE Capri Workshop Group. 2005. Fertility and Ageing. *Human Reproduction Update* 11: 261-276; Menken, J., Trussell, J., and Larsen, U. 1986. Age and infertility. *Science* 233: 1389-1394.

¹⁴ The most up to date published data from Singapore varies between clinics from 16 to 28% (2004); http://www.moh.gov.sg/content/dam/moh_web/Publications/Information%20Papers/2004/IVF_paper.pdf. These data are not dissimilar to other countries experiences.

¹⁵ Although sometimes portrayed as the 'ethical' side of egg freezing, this procedure also lacks clinical and follow up data on patient outcomes and future pregnancies; see: Bedoschi, G. and Oktay, K. 2013. Current approach to fertility preservation by embryo cryopreservation. *Fertility and Sterility* 99: 1496-1502; Oktay, K., Çil, A., and Zhang, J. 2010. Who is the best candidate for oocyte cryopreservation research? *Fertility and Sterility* 93: 13-15.

¹⁶ With advancements leading to more chances for successful cancer treatment, there is a requirement to assist in returning the person to the state before cancer, and which might include the capacity for child rearing; see: Oktay, *et al.* *ibid.*

The second set of reasons concern an elective decision to freeze eggs when there is no direct clinical indication at that time. This shift from clinical use of egg freezing to broadly elective reasons is potentially one of opportunity for the woman: it opens up reproductive choices that may be wider than those conventionally related to health such as a preference to delay or defer pregnancy. The technique does not change between clinical or non-clinical applications, so expanding its use becomes a question of its clinical and ethical appeal, or risk analysis for specific uses.¹⁷

Two influential medical societies have analysed the data so far on egg freezing, and both have concluded that it should be considered as investigational practice in clinical contexts in which the ovaries risk damage or may be affected by premature ageing. In October 2012, The Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology (ASRM) announced that egg freezing should no longer be considered experimental, *although the Committee did not yet endorse the technique for routine elective use*.¹⁸ However, a report by the European Society of Human Reproduction and Embryology (ESHRE) concluded that “the arguments against allowing [the elective] application of the technology are not convincing.”¹⁹ Nonetheless, they stated that cryopreservation technologies raise some general issues concerning the health consequences for women and any resulting children, the social implications of its use, as well as more specific questions about its feasibility and desirability in a range of novel applications in reproductive medicine.²⁰

Our focus in this report is on the increasing interest in using egg freezing for elective purposes. In this report, we consider the ethical arguments, broadly, as for and against elective egg freezing. We define all non-clinical applications as ‘elective’. Elsewhere, this has been commonly called ‘social’ egg freezing; broadly speaking, however, egg freezing is a

¹⁷ For example, the risk gradient for cancer treatment may justify the procedure as opposed to the social advantages it offers women. Alternatively, it might be a decision made in light of legal rules. For example, if the law precludes embryo freezing, or, if there is a limit as to how long an embryo can be frozen, egg freezing might be indicated as the intention to use the eggs may well be beyond 10 or 15 years.

¹⁸ ASRM, op. cit. note 1.

¹⁹ Our emphasis; ESHRE, op. cit. note 2, p. 1231.

²⁰ Egg freezing might be used to create ‘egg banks’. Egg banking would widen the options for fertility preservation in women undergoing treatment for cancer and other non-cancer-related indications, and enable the synchronisation of IVF treatments. A more detailed analysis on this area of biobanking is beyond the scope of this report. This is because egg banking opens up a wider range of ethical issues e.g. the governance of repositories and use of stored eggs for genetic research, donation to other people in egg sharing schemes or commercial transactions. See: Almeling, R. 2007. Selling genes, selling gender: egg agencies, sperm banks, and the medical market in genetic material. *American Sociological Review* 72: 319-340.

means to preserve fertility even if underpinned by this preference. ‘Social’, therefore, does not capture the broader health reasons why a woman might want to decide to do this; and, in some cases, elective use is not quite as removed from clinical indications. For example, a woman in her twenties can decide to freeze her eggs when they are most biologically viable to help her chances of conceiving later. Another woman may want to freeze her eggs because she is aware that her close relatives have gone through premature menopause (or any other relevant illness) and she may want to minimise the risk that her eggs are lost prior to a point at which she wants to have children. There may be no obvious ‘social’ differences between these choices: ageing creates a clinical indication of fertility decline, just as a clinical predisposition might do, and it has already been noted that freezing eggs at an early age might mean better chances of a later pregnancy. Thus, the decision is about safeguarding her reproductive potential; that is, her potential to have a healthy baby if and when she does decide to become pregnant.²¹

²¹ In related sense, the Israel National Bioethics Council (INBC) considers ‘age-related fertility decline’ to be a health issue, thus construing egg freezing as ‘preventive medicine’; Shkedi-Rafid, S. and Hashiloni-Dolev, Y. 2012. Egg freezing for non-medical uses: the lack of a relational approach to autonomy in the new Israeli policy and in academic discussion. *Journal of Medical Ethics* 38: 154-157.

2. The Ethics of Elective Egg Freezing

2.1 Getting the Terminology Right

In this report, we use *natural conception* to indicate any conception without clinical intervention,²² and *artificial conception* to indicate the use of any artifice requiring *clinical* intervention. *In vitro Fertilisation* (IVF) treatment is the procedure of obtaining gametes from intended fathers or donors and artificially fertilising the egg *in vitro*, before placing the embryo into the womb where it develops *in utero*. Egg freezing or oocyte²³ cryopreservation is a technique that is categorised with other *Assisted Reproduction Technologies* (ARTs).

The terminology for the use of egg freezing technologies without existing clinical indications is a contentious issue. It has come under a number of labels. Some of these should be avoided to indicate unwanted connotations. For example, the labelling of egg freezing as a ‘lifestyle choice’ invites the contention of the ‘politics of blame’ when deliberating on sensitive issues which may have an impact on gender roles,²⁴ such as the labelling of ‘bad mothers’.²⁵ A similar negativity may be attached to so-called ‘perpetual postponers’ who voluntarily delay conception, but then, possibly, find that they are involuntarily childless as a consequence.²⁶ ‘Childlessness’ is still a taboo for some, and it is a choice that may attract social disapproval.²⁷

Like ‘lifestyle’, the term ‘social’, even when linked to worthwhile pursuits like education, may suggest overly self-oriented reasons for wanting to freeze one’s eggs.²⁸ These connotations should be dispelled because of almost certainly outdated perceptions of

²² The important point to stress is that clinical intervention would bring the intended conception under appropriate legislative rules covering medical services.

²³ An oocyte is the immature female reproductive cell – egg – prior to fertilisation; it is derived from an oogonium.

²⁴ Cf. Sandelowski points to the ‘biological clock’ as a means to encourage ‘career’ women to become mothers and to criticise them for ‘hedonistic lifestyles’; Sandelowski, M. 1990. Failures of violation: Female agency and infertility in historical perspective. *Sign* 15: 475-500.

²⁵ Ladd-Taylor, M. and Umansky, L. 1998. *‘Bad’ Mothers: The politics of blame in twentieth-century America*. New York. New York University Press.

²⁶ Kneale, D. and Joshi, H. 2008. Postponement and childlessness: Evidence from two British cohorts. *Demographic Research* 19: 1935-1964.

²⁷ Rainey, S. 2013. Helen Mirren confronts the final female taboo. *The Telegraph* 4th Feb.

²⁸ Lockwood, G. 2011. Social egg freezing: the prospect of reproductive ‘immortality’ or a dangerous delusion? *Reproductive Biomedicine Online* 23: 334-340.

‘motherhood’ and gender roles. One author described the past tendency (surveyed in 1973) to view the childless as a ‘deviant group’;²⁹ although such strong views are probably the exception now, there is still the social stigma that some feel as being ‘childless’. There is also a suggestion that ‘social’ implies that delayed childbearing is a social *problem* and one that warrants only *social* solutions.³⁰ Importantly, the depiction of egg freezing as a facilitator of egoistic or self-centred preferences obscures the social and economic circumstances as to why childbearing may be deferred by many women. Social could also connote terms of equitability, or reference the positive sociability of contributing to the community in other ways.

Another term used – ‘age-related fertility preservation’ – leans toward acceptance of *medicalisation* of egg freezing without clinical indication.³¹ Borrowing from the clinical paradigm, a woman might be said to have a *predisposition* to infertility. Predispositions are diagnostically interesting because the future condition – in many circumstances by no means a certain diagnosis – may be avoided altogether by taking medical *or* behavioural action now: in our case, infertility might be avoided by means of egg freezing. However, medicalisation has become part of bioethical terminology to indicate a tendency to *create* or *redefine* conditions, previously seen as character traits or quirks, as problems that can be treated.³² In the case of egg freezing, we can speculate that *choice* could be perceived symptomatic of a reluctance to conceive *at some clinically appropriate time*.³³ The risk is that social factors, such as ‘over-work’, failure to meet the ‘right’ partner, or anxiety about the economic costs of childrearing, may be conflated with or reduced to negative character traits, turning reproductive choice into a medical concern because of the link between *personality* and *infertility*. This may suggest that women who are voluntarily childless can be ‘treated’, thus

²⁹ Veevers, J. 1973. Voluntarily childless wives: An exploratory study. *Sociology and Social Research* 57: 356-366; Veevers, J. 1973. Voluntary childlessness: A neglected area of family study. *The Family Coordinator* 22: 199-205.

³⁰ “Calling some uses of egg freezing ‘social’ is somewhat problematic because it downplays the importance of having genuine reproductive options in one’s life.” Petropanagos, A. 2010. Reproductive ‘choice’ and egg freezing. *Cancer Treatment and Research* 156: 223–235, p. 224.

³¹ CF. The Israeli term of ‘preventive medicine’; Shkedi-Rafid & Hashiloni-Dolev, op. cit. note 21.

³² Shyness, the awkwardness or apprehension some people feel when approaching or being approached by other people, is now categorised as a social anxiety condition that can be treated; see: Nuffield Council on Bioethics. 2002. *Genetics and behaviour*. London. NCB.

³³ Indeed, one study has suggested that personality traits like “conscientious” and “openness” and not education *per se* can explain the differences in fertility timing between more and less educated women. See: Tavares, L. 2008. *Who delays childbearing? The relationship between fertility, education and personality traits*. Centre for Research on Social Dynamics (Dondena) Working Paper No. 9; revised January 2010. Milano. Università Commerciale Luigi Bocconi.

creating a novel clinical condition such as ‘age-related infertility’. Aside from the concern about engendering a norm for healthy fertile women to undergo the risks of egg freezing, medicalisation is contentious as it may serve as a basis for creating an unethical extension of medical need (that, for example, *commodifies* biological processes, as discussed in section 2.4.1).

We use the term ‘Elective Egg Freezing’. In one sense, this term best captures a purely *descriptive* terminology: delayed motherhood can be a *conscious, deliberate, choice* – one that is not necessarily undertaken by the individual alone but with her kin. Already there are anecdotes of parents providing financial support for the retrieval and freezing of their daughter’s eggs as a joint decision;³⁴ and stories are emerging in some communities that it is a way to keep extended family, such as grandparents, happy while the couple pursues other interests. However, *elective* has also been criticised for implying more control than women actually have over conception. Cooke *et al.* argue, for instance, that delayed childbearing is rarely a conscious choice.³⁵ Their qualitative study with women over 35 in the UK (consisting of those with no children who were not pregnant; pregnant with their first child; and with no children attending a fertility clinic) showed that they do not regard themselves as having ultimate control over when they can have children. They claim that timing of childbearing depends on a complex interplay of factors.

Yet, *choice* is one motivation for taking *reasoned* action – not just a description of it – and varies in the extent to which it is free, coerced, constrained, encouraged and so forth. Whereas a clinical choice might be made in the compelling circumstances of illness, elective decisions are potentially going to be influenced by many more optional and operational factors. We would like ‘choice’, therefore, to be understood in its most prosaic, but normative form: that people will have their own conceptions of the ‘good life’ and will embark on its pursuit guided by culture, secular and spiritual beliefs, and within the constraints of law, policy and social norms. It reflects the ability to make a decision in respect of the options

³⁴ Wunder, D. 2013. Social egg-freezing in Switzerland and worldwide – a blessing for women today? *Swiss Medical Weekly* 143: w13746; also see: Bailey, R. 2012. The ethics of egg freezing: What’s wrong with women resetting their biological clocks? *Reason.com*; May 22; available at: <http://reason.com/archives/2012/05/22/the-ethics-of-freezing-eggs>; Gootman, E. 2012. So eager for grandchildren, they’re paying the egg freezing clinic. *New York Times*; May 13; available at: <http://www.nytimes.com/2012/05/14/us/eager-for-grandchildren-and-putting-daughters-eggs-in-freezer.html?pagewanted=all>.

³⁵ Cooke, A., Mills, T. and Lavender T. 2012. Advanced maternal age: Delayed childbearing is rarely a conscious choice: A qualitative study of women’s views and experiences. *International Journal of Nursing Studies* 49: 30-39.

available (and some options may not be), although the expected outcomes may differ in actual consequences. People who make the same choice may experience vastly different results. Choice, then, will be more or less determined by indeterminate and particular circumstances of preference satisfaction, relational networks, luck, and social conditions.

We therefore use ‘elective’ to emphasise *choice* and to signal the importance of woman having *genuine reproductive options in life*. This definition is fixed whether they are single *or* partnered/married women who wish to delay childbearing, and, it is morally significant to them regardless of their age or any other personal circumstance. (Although in the following section, both culturally/legally defined and clinical barriers might inevitably or legitimately restrict this choice.) Even if we are not seeking an uncontroversial descriptive sense of *elective*, it is well observed in many countries that more people are marrying at a later age, and more couples are having their first child later, resulting in their having fewer children than may have been intended. They are, whether one agrees to the content or not, making reasoned choices.

The report by the ESHRE states that “The option of oocyte cryopreservation may in fact give [women] more breathing space.”³⁶ The reasons for ‘breathing space’ can be broadly construed: a woman may simply not want to conceive at that time; education and career may influence her; or, she might be ‘hedging her bets’ at a young age. We can go on: deferred childbearing may reflect difficulties in partnership formation, and the preference not to rush into marriage just to have children (so as to reduce the chances of unhappiness in marriage and in future children); lack of readiness on the spouse’s part to be a parent; or the pursuit of financial or housing goals to create a desired and balanced work and childrearing environment before having a child *or another one*. The choice to opt for egg freezing can be based on one or a combination of these reasons. Whether that choice is ethical or socially defensible will be discussed in the remainder of the report.

2.1.1 Defining Our Approach

In the following we separate the ethical debate into three categories of argumentation:

1. Scientific

³⁶ ESHRE, op. cit. note 2, p. 1234.

This is predominantly about the safety and efficacy of the procedure for the woman and the health effects on any future children (section 2.2).

2. Moral

We examine some moral arguments for elective egg freezing as a choice and within a reproductive plan. We consider this in section 2.3.

3. Social

Here we specifically address whether there are possibilities for affecting the community that ethically preclude elective egg freezing, or otherwise warrant oversight of the procedure. This is the topic of section 2.4.

The science section is self-explanatory. Our approach to the moral and social, however, requires a little more to be said. The separation is premised on the following: there is an idea that choice is grounded in instrumental logic: choice concerns judgment about the means to realise some goal or purpose. This is an aspect of autonomy, but, contrary to some of the criticisms of an autonomy-grounded ethics, we have no intention of isolating the person from relational aspects. All choices are of course made in social contexts, so there is no need to prefix autonomy with ‘relational’. Choices are influenced by individual experiences, desires, and intentions, but, importantly, they are not made in isolation of social influence and conventions. It is therefore important to talk about a person’s goals in terms of her *identity*, that is, a person lives out her goals and values as expressing her sense of self, often in *identification with others* within a context of intimate and steady or more distant and superficial relationships. Identity could thus involve immeasurable and indeterminate relationships, and probably revolves around a fluctuating sense of ‘self’: as one opportunity closes, another opens up. Technologies may be enabling or otherwise for the individual: autonomy may be (dis)enabled in one way or another; relationships may be forged or broken.

Our aims in this report, therefore, are to, firstly, work through *identity-based* reasons, and then, secondly, consider reasons based on social argumentation,³⁷ with respect to the ethical aspects of elective egg freezing. While this separation between the ‘moral’ and the ‘social’ is not entirely clean, it helps to define what choices are important to individuals (what we call

³⁷ Although there is some imprecision, what we mean here are the mainly social – sometimes population based – arguments. In these collective terms, they are more likely to find traction in regulatory policy.

the *moral case*), and then allows us to work out how such choices may sit within the social context. First, however, we look at the scientific evidence.

2.2 Scientific Arguments

Modern ARTs have mushroomed since the advent of IVF.³⁸ In many countries, IVF is considered as standard clinical practice for people who are incapable of natural conception. It requires highly trained specialists to carry out the procedures, and still results in relatively few successful pregnancies.

Human sperm (spermatozoa) have been successfully frozen for decades, and the first successful report of human embryo freezing that generated a pregnancy was in 1983. Subsequently both human sperm and embryo cryopreservation have become routine clinical technologies. Egg freezing was first employed in the 1980s using slow freezing grew and out of the need to store eggs not used in fertility cycles; the first report of a successful pregnancy using a thawed egg was in 1986.³⁹ It was commercialised in America in 2004 by the company *Extended Fertility*.⁴⁰ IVF involves the collection of eggs from the woman. This requires injecting hormones that stimulate the ovaries to release eggs, followed by a surgical procedure to aspirate them. It is time-consuming, uncomfortable, expensive, and can have risks. Thus policies often recommend limiting the number of IVF cycles a woman should normally go through, resulting in clinics tending to over- rather than under-collect eggs. Rather than fertilise and freeze the resulting embryos, the unused eggs can be frozen and stored in case the current treatment cycle fails.

The announcement of the birth of the first baby from frozen oocytes in the UK triggered comments critical of this technique. In particular, a prominent fertility expert warned that “freezing human oocytes could cause irreparable harm to future generations” because of the considerable risk of chromosomal harm to children posed by (the then nascent) slow freeze

³⁸ Leridon, op. cit. note 12; Te Velde, E. and Pearson, P. 2002. The variability of female reproductive ageing. *Human Reproduction Update* 8: 141-154.

³⁹ Chen, op. cit. note 9.

⁴⁰ Shkedi-Rafid, S. and Hashilloni-Dolev, Y. 2011. Egg freezing for age related fertility decline: Preventive medicine or a further medicalization of reproduction? *Fertility and Sterility* 96: 291-294.

and rapid thaw methods used.⁴¹ At the time, slow freezing was also dogged by poor egg survival, limited fertilisation success, and low pregnancy and live birth rates.

Vitrification uses technologies to rapidly freeze eggs, and “has been defined as a vitreous, transparent, ice-free solidification of water-based solutions at sub-zero temperatures.”⁴² The first live birth was recorded in 1999.⁴³ Whether vitrification is an improvement on modern slow-freezing techniques is contentious. Studies have suggested that when compared, vitrification has better egg survival and fertilisation rates, and clinical pregnancies per egg thawed. Some fertility clinics, however, report equivalent success rates with both (with freezing and thawing/fertilisation conditions optimised). Many fertility clinics have however moved from slow-freezing to vitrification.

We summarise the scientific evidence presented by the ASRM in their 2013 guideline on ‘Mature oocyte cryopreservation’.⁴⁴

(a) Based on randomised controlled trials and large observational studies, there is good evidence that *fertilisation and pregnancy rates are similar to IVF/Intracytoplasmic sperm injection (ICSI) with fresh oocytes* when frozen (vitrified/thawed) oocytes are used as part of IVF/ICSI in young women.

(b) Data, while limited, shows no increase in chromosomal abnormalities, birth defects, or developmental deficits in children born from cryopreserved oocytes *when compared to pregnancies from conventional IVF/ICSI and the general US population*.

(c) For reasons (a) and (b), oocyte vitrification/warming should *no longer be considered experimental*.

(d) *There is no conclusive evidence on whether the incidence of anomalies and abnormalities of children born from frozen eggs is similar to those born from frozen embryos*. While

⁴¹ Winston, R. 2002. Why ‘ice babies’ could cause irreparable harm to future generations: A warning from Britain’s leading fertility expert. *The Evening Standard* (London) October 15.

⁴² Liow, S., Foong, L., Chen, N., Yip, W., Khaw, C., Kumar, J., Vajta, G and Ng, S. 2009. Live birth from vitrified warmed human oocytes fertilized with frozen thawed testicular spermatozoa. *Reproductive BioMedicine Online* 19: 198-201.

⁴³ Kuleshova, L., Gianaroli, L., Magli, C., Ferraretti, A., and Trounson, A. 1999. Birth following vitrification of a small number of human oocytes: case report. *Human Reproduction* 14: 3077–3079.

⁴⁴ ASRM, op. cit. note 1.

freezing eggs is a valid alternative to freezing embryos, more data needs to be collected before the former should be routinely used.

Based on (a-d), the ASRM supports the use of egg freezing to improve cumulative pregnancy rates in couples undergoing IVF treatment who are unable to freeze embryos; and for women undergoing gonadotoxic treatment (e.g. chemotherapy) with few options to preserve their fertility. They do not recommend the use of egg freezing by reproductive healthy women for the sole purpose of deferring childbearing because of insufficient data on “safety, efficacy, ethics, emotional risks, and cost-effectiveness of oocyte cryopreservation for this indication.”⁴⁵ The ASRM consider that women in their late reproductive years may be the ones most interested in the use of egg freezing to circumvent reproductive ageing. However, safety and efficacy of egg freezing data are shown with respect of “young highly selected populations”;⁴⁶ and they write: “Success rates with oocyte cryopreservation appear to decline with maternal age consistent with the clinical experience with fresh oocytes” and significantly so for women above 38.⁴⁷ There is also a lack of long term data on developmental outcomes and safety data in “diverse (older) populations”.⁴⁸ Consequently the ASRM does not support elective egg freezing.

The ESHRE differs in its recommendation on elective egg freezing. Based on the scientific evidence on safety of egg freezing and its efficacy as demonstrated by vitrification, and in light of relevant ethical considerations, the ESHRE considers it ethically acceptable to offer oocyte cryopreservation to healthy women to preserve their fertility. The lack of long term data on safety and the use of the technology by women in their late reproductive years do not deter its conclusion, and the procedure should cautiously proceed in respect of fertility centres having a responsibility to collect data on the long term health of children born from cryopreserved eggs. While elective egg freezing should not be recommended for women above 38 because freezing eggs *at that stage* is unlikely to lead to a successful pregnancy, “there may be cases where a prior assessment of the ovarian reserve justifies the

⁴⁵ Ibid. p. 42.

⁴⁶ Ibid. p. 39. In an earlier 2009 article, the ASRM noted that published data on success rates was largely derived from experience with frozen eggs sourced from healthy young donors under the age of 30; Practice Committee of the American Society for Reproductive Medicine. 2009. ASRM Response Committee response to Rybak and Lieman: elective self-donation of oocytes. *Fertility and Sterility* 92: 1513-1514.

⁴⁷ ASRM, op. cit. note 1, p. 40.

⁴⁸ Ibid.

procedure.”⁴⁹ The ESHRE concludes that “Counselling based on individual assessment of the available reproductive potential would seem to be the best approach.” The reasons for proceeding with caution include the significant physical and psychological risks posed to the woman undergoing the procedures of hormonal hyperstimulation potentially causing OHS, and surgical removal of the eggs.⁵⁰

The technology, however, seems comparable to other ARTs. In the most up to date data on egg freezing we could find – in the internationally reputable journal *Fertility and Sterility* – the Editorial opined: “It may be concluded that vitrification is effective.”⁵¹ The statement is based on a review in the same volume in which survival rates of frozen eggs is now at around 90%, and pregnancy rates range from 60 to 75%.⁵² Earlier studies had also shown that in 900 newborns worldwide (by 2010), there had been no apparent increase in birth anomalies,⁵³ although genetic anomalies are known to occur in the DNA of eggs during the freezing and defrosting process.⁵⁴ The significance of these changes is unknown, but it is known that *many* ARTs seem to incur genetic alterations that may or may not be clinically significant.⁵⁵

Cobo *et al.* also found that there is very little difference in contemporary studies between using fresh and vitrified eggs and successful pregnancies. They did note that most of the data derived from clinics that are regarded as expert in the techniques.⁵⁶ These clinics use a wide array of techniques and laboratory standards, and between them, there are a number of patient and technique-dependent variables. Moreover, the clinical outcomes of egg vitrification used

⁴⁹ ESHRE, op. cit. note 2, p. 1234.

⁵⁰ *Ibid.* p. 1235.

⁵¹ Donnez, J. 2013. Introduction: Fertility preservation, from cancer to benign disease to social reasons: The challenge of the present decade. *Fertility and Sterility* 99: 1467-1468, p. 1467.

⁵² Cobo, A., Garcia-Velasco, J., Domingo, J., Remohí, J. and Pellicer, A. 2013. Is vitrification of oocytes useful for fertility preservation for age-related fertility decline and in cancer patients? *Fertility and Sterility* 99: 1485-1495.

⁵³ Noyes, N., Porcu, E., and Borini, A. 2009. Over 900 oocyte cryopreservation babies born with no apparent increase in congenital anomalies. *Reproductive Biomedicine Online* 18: 769–776.

⁵⁴ Coticchio, G., Bromfield, J., Sciajno, R., Gambardella, A., Scaravelli, G., Borini, A., and Albertini, D. 2009. Vitrification may increase the rate of chromosome misalignment in the metaphase II spindle of human mature oocytes. *Reproductive Biomedicine Online* 19(suppl 3): 29-34.

⁵⁵ On genetic imprinting see: Fauque, P. 2013. Ovulation induction and epigenetic anomalies. *Fertility and Sterility* 99: 616-623. On health of IVF children, see: Ceelen, M., van Weissenbruch, M., Vermeiden, J., van Leeuwen, F., Delemarre-van de Waal, H. 2008. Growth and development of children born after in vitro fertilization. *Fertility and Sterility* 90: 1662-1673; and Zegers-Hochschild, F., Adamson, G., de Mouzon, J., Ishihara, O., Mansour, R., Nygren, K., Sullivan, E., and Vanderpoel, S. 2009. The International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) Revised Glossary on ART Terminology. *Human Reproduction Update* 24: 2683-2687.

⁵⁶ Cobo, *et al.* op. cit. note 52; also see: Schubert, C. 2012. World of reproductive biology: Oocyte freezing sparks debate at meeting. *Biology of Reproduction*; published online before print; August 29, 2012, doi: 10.1095/biolreprod.112.104455

by women to specifically *delay* pregnancy are not yet known because of little available data from the few so far to have used it.⁵⁷

Experiences of OHS include moderate symptoms – including abdominal discomfort-distension, thirst, nausea, vomiting and diarrhea – which only require surveillance; to cases that need hospitalisation with variable degrees of severity, including abdominal-pain, uncontrollable vomiting, accumulation of fluid in the abdomen (ascites), decreased blood volume or pressure (hypovolemia-hypotension), difficulty in breathing (dyspnoea), low or severe urine output (oliguria-anuria), electrolyte imbalance, decreased fluid content in blood (hemoconcentration), abnormal liver function, hepatorenal (liver or kidney) failure, thrombosis (blood clots) and acute respiratory distress syndrome. Transvaginal oocyte retrieval guided by ultrasound is now the clinical norm, and complications are exceptional.⁵⁸ Although rare, the physical risks of OHS and egg retrieval can threaten the woman's life.⁵⁹ The psychological risks are more difficult to quantify, but include stress and depression whilst undergoing the procedures.⁶⁰ However, all of these risks are the same as for any IVF treatment in women of comparable age.⁶¹ Moreover, a very recent study indicated that these risks are now minimal when compared with spontaneous pregnancies.⁶²

While it is clear that a great deal of further study is needed – hence the cautious support – it should be noted that both Societies have fully endorsed other ARTs, such as IVF treatment, where there is also only growing evidence of its efficacy in successful births. As a matter of policy, therefore, support for some technologies and not of others seems to be a particular assessment of 'risk'.

⁵⁷ One study of patients to take note of, in this regard is (although only one pregnancy-birth has so far been recorded using electively frozen eggs; the baby was born healthy): Garcia-Velasco, J., Domingo, J., Cobo, A., Martinez, M., Carmona, L., and Pellicer A. 2013. 5-years' experience employing oocyte vitrification to preserve fertility for medical and nonmedical indications. *Fertility and Sterility* pii: S0015-0282(13)00261-6. doi: 10.1016/j.fertnstert.2013.02.004. [Epub ahead of print].

⁵⁸ Siristatidis, C., Chrelias, C., Alexiou, A., and Kassanos, D. 2013. Clinical complications after transvaginal oocyte retrieval: A retrospective analysis. *Journal of Obstetrics and Gynaecology* 33: 64-66.

⁵⁹ Braat, D., Schutte, J., Bernardus, R., Mooij, T. and van Leeuwen, F. 2010. Maternal death related to IVF in the Netherlands 1984-2008. *Human Reproduction* 25: 1782-1786.

⁶⁰ Domar, A., Smith, K., Conboy, L., Iannone, M. and Alper, M. 2010. A prospective investigation into the reasons why insured United States patients drop out of in vitro fertilization treatment. *Fertility and Sterility* 94: 1457-1459; and Cousineau, T. and Domar, A. 2007. Psychological impact of infertility. *Best Practice & Research Clinical Obstetrics & Gynaecology* 21: 293-308.

⁶¹ Grifo, J. and Noyes, N. 2010. Delivery rate using cryopreserved oocytes is comparable to conventional in vitro fertilization using fresh oocytes: potential fertility preservation for female cancer patients. *Fertility and Sterility* 93: 391-396.

⁶² Farhi, A., Reichman, B., Boyko, V., Hourvitz, A., Ron-El, R. and Lerner-Geva L. 2013. Maternal and neonatal health outcomes following assisted reproduction. *Reprod Biomed Online* pii: S1472-6483(13)00057-6. doi: 10.1016/j.rbmo.2013.01.014. [Epub ahead of print].

2.3 Moral Arguments

The World Health Organisation (WHO) defines reproductive health as the following:

[People] have the capability to reproduce and the freedom to decide if, when and how often to do so. Implicit in this are the right of men and women to be informed of and to have access to safe, effective, affordable and acceptable methods of fertility regulation of their choice, and the right of access to appropriate health care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant.⁶³

Reproductive health has also been affirmed as a human right in other international documents.⁶⁴ Specifically, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), adopted in 1979 by the UN General Assembly, states that:

State parties are obliged to include advice on family planning in the education process... and to develop family codes that guarantee women's rights 'to decide freely and responsibly on the number and spacing of their children and to have access to the information, education and means to enable them to exercise these rights' (article 16.e).

The approach of these documents orientates the ethical debate to issues of individuality – enabling people to live the lives that are important to them, which include the timing and kinds of family they want to have – prior to issues of population dynamics. In respect of wider social issues, however, the Convention affirms the reproductive rights of women, *and* targets culture and tradition as influential forces shaping gender roles and family relations. Thus, the Convention is not meant only to recognise *individualistic* moral grounds for advocating reproductive rights, but to also situate women's lives within the context of family and community.⁶⁵ Following this, then, we first look at the ethical reasons an *individual*

⁶³ http://www.who.int/topics/reproductive_health/en/

⁶⁴ These documents are the Convention on the Elimination of All Forms of Discrimination against Women and the International Conference on Population and Development (ICPD) Programme of Action.

⁶⁵ For a detailed moral-political critique of this point, see: Gewirth, A. 1996. *The community of rights*. Chicago. Chicago University Press.

might use to justify the intention to electively freeze eggs, before placing these in terms of identity embedded in a social context.

2.3.1 'Levelling the Reproductive Playing Field'

The moral case for elective egg freezing has been advocated on broadly egalitarian grounds.⁶⁶ Biologically, healthy men can produce sperm until death (although there is increasing evidence that the health of sperm may deteriorate), whereas women's ovaries diminish with age producing fewer and lower quality eggs. In view of their 'biological clock', women are discouraged from 'lifestyles' that do not accommodate or prioritise marriage and motherhood. Men, on the other hand, regularly defer fatherhood well above their 40s, are rarely censured, and sometimes celebrated for doing so.⁶⁷ Furthermore men have been allowed to freeze sperm and use it in their advanced years to conceive with a (usually younger) partner through IVF. Against this background, some commentators argue that elective egg freezing, along with other ARTs, would "level the playing field"⁶⁸ in reproduction, and allow women to, like men, "enjoy the choice of when they have children."⁶⁹ Of course, men also have a 'biological clock' when their own health might be optimal for having children; therefore, they should not put off fatherhood for too long;⁷⁰ ageing has an impact on male fertility potential, as well as potential genetic effects for the offspring.⁷¹ Unlike sperm freezing, however, women face risks of the procedures necessary for egg freezing.

To some, technology 'egalitarianism' seems misguided. As Harwood writes, "Egg freezing ...does not substantially alter the social structures that have constructed inequalities out of the biological difference between women and men, including women's more limited window of time to reproduce biologically."⁷² There is also an extensive feminist literature that argues that ARTs are not in fact wholly liberating. Rather, they can create new pressures on women

⁶⁶ See: Goold, I. and Savulescu, J. 2009. In favour of freezing eggs for non-medical reasons. *Bioethics* 23: 47-58.

⁶⁷ Egg freezing, therefore, has the potential to transform society's double standard on 'mature' genetic parenting: acceptable and even approved for older men, and disapproved for older women; *ibid*.

⁶⁸ Rybak, E. and Lieman, H. 2009. Egg freezing, procreative liberty, and ICSI: The double standards confronting elective self-donation of oocytes. *Fertility and Sterility* 92: 1509-1512, p. 1509.

⁶⁹ Goold and Savulescu, *op. cit.* note 66, p. 52.

⁷⁰ Studies have shown associations between paternal age and birth defects, developmental disorders (e.g. autism) and mental illnesses (e.g. schizophrenia), as well as higher risks of miscarriage in their partners.

⁷¹ Crosnoe, L. and Kim, E. 2013. Impact of age on male fertility. *Current Opinion in Obstetrics and Gynecology* 25: 181-185.

⁷² Harwood, K. 2009. Egg freezing: A breakthrough for reproductive autonomy? *Bioethics* 23: 39-46, p. 46.

to become mothers by encouraging attitudes that consider it wrong for women *not* to take up these opportunities.⁷³ Others have claimed that the “ostensibly universal access to ART may weaken women's struggle against social sanctions of infertility.”⁷⁴ What may happen is that egg freezing diverts research and attention to furthering ARTs instead of tackling the reasons for delayed parenting for those who actually want to have children.

While we are fully supportive of promoting equality, it is not clear to us that any ARTs, *isolated from particular social constraints*, would determine wider choices for the particular women making them; technology, in this sense, may be both the problem and the solution, depending on individual circumstances. The benefits of the technology would be decided by relationships, economics, social norms, and fundamentally, access to the technology itself (legally, or within a country's development/economic status, for example). The CEDAW calls for rights equality in *all aspects* of a woman's life, and only from this wide-ranging perspective would meaningful social change occur.

2.3.2 Ownership of Eggs

The idea that people own their bodies may be taken to imply that decisional authority over use and control over the body should vest in the individual. Such an approach forces societies to consider such reproductive issues as ‘the right to abortion’ or access to surrogates, both of which stray too far from our central issue here. But, if one owns the products of one's body then can one choose to do whatever they want with their eggs?

The idea of property in the person has become fraught within the law, to the extent that it is difficult to find anything like conceptual coherence. A recent UK case (*Yearworth v North Bristol NHS Trust*; see section 3.1 for more details on the case), however, is intriguing in this respect, because, for the first time, a common law court ruled that a person *does*, in special circumstances, have ownership over their gametes when bailed to a medical facility for safe keeping.⁷⁵ Whether or not the court's argument (or more specifically, the property argument)

⁷³ Hartouni, V. 1997. *Cultural conceptions: On reproductive technologies and the remaking of life*. Minneapolis. University of Minnesota Press; Inhorn, M. and Birenbaum-Carmeh, D. 2008. Assisted reproductive technologies and culture change. *Annual Review of Anthropology* 37: 177-196; and Vayena, E. 2009. Assisted reproduction in developing countries: The debate at a turning point. In: *Reprogen-ethics and the future of gender*. Simonstein, F. (ed.). Dordrecht. Springer Verlag. pp. 65-77.

⁷⁴ Neyer, G. and Bernardi, L. 2011. Feminist perspectives on motherhood and reproduction. *Historical Social Research* 36: 162-176, p. 171.

⁷⁵ *Yearworth and others v. North Bristol NHS Trust*, EWCA Civ 37 (2009); QB 1. (2010).

can be supported by ethical reasoning, as some commentators have provided,⁷⁶ the fact remains that the actual use of one's bodily products might well fall into the conditions of statutory legislation. Quite simply, even if we do own our bodies (which was by no means settled by this one case),⁷⁷ we are not legally permitted to do whatever we want with our bodies and body parts. In the UK case, it was emphasised that the law is clear that one can only *request* stored sperm to be used in a particular way – to be frozen for future use by the plaintiffs – by a licensed body and in accordance with the law.⁷⁸ This does not equate to a right to do whatever we want with our bodies.

2.3.3 Elective Egg Freezing and Choice

Clarity on the ethical issues of elective egg freezing can be gained by thinking more about the choice in relation to a woman's identity.⁷⁹ In a US survey with women (holding a bachelor's degree and above) undergoing elective egg freezing, the majority of them described themselves as "intelligent" and "extroverted".⁸⁰ One might surmise that they had thought out their views on life and decided this was for them – elective egg freezing appeared to mean the freedom to wait for a suitable partner rather than settle for one in rushing to conceive.⁸¹ A Belgium survey among women of reproductive age showed that those who consider themselves as potential elective egg freezers are significantly younger and desire more children than those with no interest in freezing their eggs.⁸² Again, this seems to indicate an

⁷⁶ See: Beyleveld, D. and Brownsword, R. 2000. My body, my body parts, my property? *Health Care Analysis* 8: 87-99.

⁷⁷ Harmon, S. 2010. Yearworth v. North Bristol NHS Trust: A property case of uncertain significance. *Medicine, Health Care and Philosophy* 13: 343-350.

⁷⁸ Relevant Singapore policies would include the *Human Cloning and Other Prohibited Practices Act 2004* which prohibits commercial trading in human eggs, and the *Licensing Terms and Conditions*, op. cit. note 4, which require the licensing of ART services under the Director of Medical Services.

⁷⁹ We note that the comparative value of surveys is hindered by a number of well-known study factors. In studies, such as those relating to choice, the sets of question asked are not really compatible between different studies; for a more detailed explanation, see the analysis in: Sobotka, T. 2013. Oocyte cryopreservation as an insurance strategy: A socio-demographic viewpoint. *Proceedings of the 1st International Symposium on Social Egg Freezing*, Barcelona, Spain, February 1st. Clínica Eugén. Barcelona. pp. 4-28.

⁸⁰ Gold, E., Copperman, K., Witkin, G., Jones, C. and Copperman, A. 2006. A motivational assessment of women undergoing elective egg freezing for fertility preservation. *Fertility and Sterility* 86: Suppl 1: S201.

⁸¹ Ibid.

⁸² Stoop, D., Nekkebroeck, J. and Devroey, P. 2011. A survey on the intentions and attitudes towards oocyte cryopreservation for non-medical reasons among women of reproductive age. *Human Reproduction* 26: 655-661.

awareness of the kind of life they want to lead.⁸³ Other surveys of women's attitudes suggested that the main reasons for egg freezing are (in no particular order):

1. Education aspirations;⁸⁴
2. Career aspirations;⁸⁵
3. Notion of 'right point' in their life;⁸⁶
4. Sufficiently 'stable' – including financial security and/or in a secure relationship;⁸⁷
5. That they were 'unready';⁸⁸
6. Lacked support of a 'partner';⁸⁹
7. Avoid being rushed into motherhood.⁹⁰

⁸³ And indeed, is not an attitude to be discouraged: "At the individual level, better educated people are doing better along almost any dimension, ranging from mental health to the ability to recover from shocks to lower unemployment. At the aggregate level, systems of governance and democracy have been shown to be closely related to a society's level of education." Lutz, W. and Samir, S. 2011. Global human capital: Integrating education and population. *Science* 333: 587-592.

⁸⁴ Benzies, K., Tough, S., Tofflemire, K., Frick, C., Faber, A. and Newburn-Cook, C. 2006. Factors influencing women's decisions about timing of motherhood. *Journal of Obstetric, Gynaecologic, and Neonatal Nursing* 35: 625–633; Carolan, M. and Nelson, S. 2007. First mothering over 35 years: questioning the association of maternal age and pregnancy risk. *Health Care Women International* 28: 534–555; Carolan, M. 2007. The project: having a baby over 35 years. *Women Birth* 20: 121–126; Dobrzykowski, T. and Noerager Stern, P. 2003. Out of sync: a generation of first-time mothers over 30. *Health Care Women International* 24: 242–253; Friese, C., Becker, G. and Nachtigall, R. 2006. Rethinking the biological clock: eleventh-hour moms, miracle moms and meanings of age-related infertility. *Social Science and Medicine* 63: 1550–1560; Soloway, N. and Smith, R. 1987. Antecedents of late birthtiming decisions of men and women in dual-career marriages. *Family Relations* 36: 258–262; Yang, Y. Peden-McAlpine, C. and Chen, C. 2007. A qualitative study of the experiences of Taiwanese women having their first baby after the age of 35 years. *Midwifery* 23: 343-349.

⁸⁵ Ibid.

⁸⁶ Benzies, *et al.*, op. cit. note 84.

⁸⁷ Dobrzykowski & Noerager Stern, op. cit. note 84; Also see the ClearState Report: 60% of 91 people who were 'likely or somewhat likely to undergo egg freezing' indicated "financially and emotionally prepared" (p. 26).

⁸⁸ Benzies, *et al.* op. cit. note 84.

⁸⁹ Cooke, A., Mills, T., and Lavender, T. 2010. 'Informed and uninformed decision making' – women's reasoning, experiences and perceptions with regard to advanced maternal age and delayed childbearing: a meta-synthesis. *International Journal of Nursing Studies* 47: 1317–1329; Maheshwari, A., Porter, M., Shetty, A. and Bhattacharya, S. 2008. Women's awareness and perceptions of delay in childbearing. *Fertility and Sterility* 90: 1036-1042.

⁹⁰ Maheshwari, *et al.* *ibid*; also see: "Women who were likely to do egg-freezing for nonmedical purposes wanted to increase the chances of pregnancy, room for financial and emotional preparation and freezing eggs as a form of 'insurance'". (ClearState; p. 44).

All of these reasons suggest a pattern of planning: a woman may want to decide when is *best for her* to become a mother. This is, of course, borrowed from the idea of *family planning*: people have preferences for if, when, and how they have children.⁹¹

Some argue, however, that because career and economic status contribute to the social identity, for many people delayed childbearing is not necessarily a deliberate choice. As Soloway and Smith write, “career men as well as career women deal with similar issues about late birth timing decisions. In most cases, however, if one of the partners had not yet dealt with one of the issues [role identity and individual identity], the decision was delayed until the other partner came to terms with it.”⁹² But this is not an argument *not* to plan for when to become pregnant, which, importantly, might be influenced in this respect by being in the right relationship. It is simply a point that choices will be shaped *by* these relationships and the possibilities they offer.

So, should this preference be framed as a choice to freeze eggs? On the one hand, egg freezing is unlikely to extend the window for fertility significantly, as this is largely set by the confines of biology and the body (see below, section 2.4.2 on Enhancement; although there are some exceptional stories of women conceiving outside of the expected biological range). And there are risks in delaying pregnancy: elective IVF treatment is going to be a reproductive (and potentially costly) gamble, and egg freezing may compound the clinical limits of what ARTs can do. IVF treatment on the whole is tricky, exacting and uncertain, and will therefore not work for some women; it is certainly not going to *reverse* fertility in any meaningful way. Therefore, putting off having children in any circumstances limits the chances one may have to conceive, and starting early may improve these odds. Yet it should be noted that human reproduction is itself an inefficient undertaking: having children at a young age through natural conception is no guarantee of a successful pregnancy either, although clinical factors are likely to be at play in these cases. And there are going to be some social factors – such as meeting the right partner – that will cut across *all relationships* regardless of age.

⁹¹ The ClearState Report appears to support this statement; Reasons for *delaying pregnancy*: 78% Job/Financial Security; 62% Relationship Stability; 34% Belief that there will be no problem having children the future; p. 12.

⁹² Soloway, N. and Smith, R. 1987. Antecedents of late birth timing decisions of men and women in dual-career marriages. *Family Relations* 36: 258-262.

On the other hand, egg freezing is an accepted option for those unable to conceive naturally because of clinical indications, and, as a result, there is likely to be improvements in the IVF procedures and techniques. These improvements could occur during the lifetime of someone given the opportunity to choose to freeze their eggs now. Thus, the success of pregnancy should not be a determining factor in this debate, because risks can be assumed in an informed way, and, moreover, the technology may gain further credence in terms of safety and efficacy.

These two viewpoints may be compatible, however, and summarised as thus: firstly, elective egg freezing should not be considered as ‘insurance’ for fertility purposes because the expected ‘coverage’ is currently minimal.⁹³ The ‘safety net’ strategy meant to protect oneself seems in fact to be planted on insecure ground. Secondly, undergoing IVF in one’s mid-late thirties using pre-frozen eggs is more likely to result in a successful birth than using oocytes collected at the time of treatment. Thirdly, egg freezing itself is not a problematic technology if it is deemed acceptable for other purposes.

Thus, elective egg freezing may be an *opportunity* (but not a certainty) to live life as a woman decides to and may well fit into broader patterns of family planning. It is a way to pursue other important goals rather than “face the natural limits of their own reproductive system.”⁹⁴ As people live ever longer, it is perhaps to be expected that their expectations of life change; many can be healthy and active well beyond typical limits placed on conceptual ‘old age’. Importantly, if a woman chooses to take a non-parenting role at that time she is freezing eggs (that would otherwise be naturally lost), she is not going to be freezing *all* of her eggs, and can still decide to become pregnant during the normal reproductive window.

2.3.4 Taking Stock

If elective egg freezing is considered ethical *ceteris paribus*, a first step is to inform the woman about options and risks. This leads back to the ideas of *autonomy* used to identify

⁹³ Insurance in this sense is a kind of self-protection – a reduction in the probability of loss should an event occur. This seems a mistaken view for two reasons. One, elective egg freezing is still considered as non-routine clinical practice, thus insurance – in the sense that the risks are covered – seems unlikely to justify the activities that people would otherwise avoid; the outcomes simply are not known. Two, coverage is unlikely to recuperate the loss experienced by unexpectedly not being able to be a mother. However, insurance to cover the liabilities of those who provide egg freezing services might be considered more appropriate.

⁹⁴ Wyndham, N., Gabriela, P., Figueira, M. and Patrizio, P. 2012. A persistent misperception: Assisted reproductive technology can reverse the ‘aged biological clock’. *Fertility and Sterility* 97: 1044–1047.

with a chosen life plan. To frame reproductive choice as *either* children *or* an education *or* career redirects this plan. Moreover, to impose preferences on people is to fall back on assumptions about how one should live their life according to presupposed ideas of things like marriage, children, and who should be the wage earner. It is, as such, a constraint on a woman's identity. Instead, if one considers such issues to be worked out for oneself, which may include input from family and friends, the future seems more open; more options for planning are available. This does not necessarily address equity (2.3.1); and does not answer questions of strict property ownership (2.3.2). However, it does mean that the 'right' time for childbearing is less about conjecture, because, on an individual basis there may be different notions of when it is the right time to become a parent.

The problem(s) of choice, however, is said to be ingrained in affluent societies where nearly every option is potentially open.⁹⁵ Some point out the overload or paralysis that comes from limitless consumer choice;⁹⁶ and observe that many may be relatively less satisfied with the choice they make when there are more and more options to choose from. Others may regret the choice they made. In respect of egg freezing, of course, some women may have limited opportunities: underlying health conditions may advise against the stress of the procedure. Also, the procedure is likely to be expensive and out of reach of some. For those able to make this decision, the costs, health concerns and success rates may not be persuasive when perceived as part of a considered life plan. Moreover, one can imagine the disappointment of a failed IVF procedure following elective egg freezing; not to mention the money that now seems ill-spent. These considerations may come down to realising the 'opportunity costs' of a decision – the value lost in respect of not taking the next-highest-valued alternative; regret at the opportunities not taken; and even reconciling expectations about how life should, or could have been. (It has been observed, for example, that forcing money choices on patients often keeps them from doing things important for their health; although they can afford a treatment, they decide to put it off or look to a 'cheaper' alternative.)

However, these considerations do not take away from the argument that armed with the right information a person can make better decisions and can take responsibility for them. It is

⁹⁵ We note, of course, that gender still defines many of the opportunities available to women. In this respect, N. Hass (2011) noted in *Vogue*, "stopping the biological clock through egg freezing has long been the ultimate feminist fantasy", relating to the gender imbalances that still have an independent impact on education and earnings prospects.

⁹⁶ Schwartz, B. 2004. *The paradox of choice*. New York. Harper Perennial.

certainly the case that whether ‘more choice is worse’ will depend on the person’s ability to handle decisions; experiences and expertise; the preconditions in which they are to be made; and the expected and actual outcomes.⁹⁷

So, although it is clear that *biologically* speaking, having children around the mid-twenties is the optimal time *if the plan revolves around the best chances of having a pregnancy and having healthy children without clinical intervention*, a woman may consider the ability to provide for her future children as more important, and that her own education, earnings, or stability are instrumental to this.⁹⁸ Egg freezing might, therefore, be part of a ‘hedging strategy’: increasing the scope for childbearing by investing in securities (as a consumer of newly available reproductive services) that might protect against future infertility, while simultaneously pursuing other conditions for successful parenthood. Like any other strategy of this kind, one ought to be aware of the uncertainties and risks that accompany egg freezing.

We cannot leave this debate as just one of choice, however. Delayed parenthood has been associated with a stable family environment, higher socioeconomic position, higher income and better living conditions.⁹⁹ *These are possibly the result of potential parents taking steps to secure an education and career to better support a future family.* Maturity has also been shown to be associated with better parenting practices.¹⁰⁰ But all of these factors have social deterrents as well, to be discussed shortly. The establishment of an egg freezing culture *will* impact society, because individual choice and actions eventually contribute to shifts in societal values. As Callahan writes (in respect of prenatal genetic tests and warning against *too much* choice), “No one will be forced to make use of that information; it will be a matter of choice, it is said. But if the history of new technologies is any guide, it will soon be

⁹⁷ Scheibehenne, B., Greifeneder, R. and Todd, P. 2010. Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research* 37: 409-425.

⁹⁸ This infers the problematisation of ‘teenage pregnancy’. In respect to the chances of a successful pregnancy, there seems to be little difference between having children at an even younger age; yet the concerns of providing for any future child are persuasive in discouraging this. Cf. One report concludes “...that there are strong grounds for investing in early childhood and youth development programmes as strategies for reducing unintended teenage pregnancy rates. Happiness, enjoyment of school and ambition can all help to delay early parenthood”; Harden, A., Brunton, G., Fletcher, A., Oakley, A., Burchett, H. and Backhans, M. 2006. *Young people, pregnancy and social exclusion: A systematic synthesis of research evidence to identify effective, appropriate and promising approaches for prevention and support*. London. EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. Also see: Monk, D. 1998. Sex education and the problematization of teenage pregnancy: A genealogy of law and governance. *Social Legal Studies* 7: 239-259.

⁹⁹ See: Schmidt, L., Sobotka, T., Bentzen, J., Nyboe Andersen A. 2012. Demographic and medical consequences of the postponement of parenthood. *Human Reproduction Update* 18: 29-43.

¹⁰⁰ Ibid.

considered ethically irresponsible not to make use of them.”¹⁰¹ So, while there are arguments for justifying legitimate choices in circumstances where there is more or less appreciation of the risks, or costs and effectiveness, there are still going to be a plurality of external views influencing (or even controlling) their choices, and obligations and barriers that require consideration (for example, ethical, religious or cultural grounds that the woman herself does not hold, in addition to legislative rules).¹⁰²

Returning to our opening of this section where we quoted the WHO, we reiterate its ambition to widen reproductive rights by maximising opportunities, but not to do so without having due consideration of the needs of communities. Thus, we conclude this section with the observation that there appears to be no conclusive arguments that preclude a woman from choosing to freeze her eggs for elective purposes. However, there are social factors that may limit this choice, as discussed in the next section.

2.4 Social Arguments

In this section we focus on the wider implications of elective egg freezing. As pointed out in section 2.1.1, the demarcation between particular moral and social arguments is often not neat. We find that *social* arguments, however, characterise two interrelated issues: population policies and changing cultural attitudes. Major trends in fertility are going to be of interest to policy makers with an eye to population wide reforms. Nevertheless, the reasons why trends emerge are likely to start with personal decisions that begin to appeal to the institutions of community or culture. As we noted in the previous section, delaying pregnancy might be an ethical choice to be made. We pointed out that it may be advantageous for a woman to have children much later in life: she may be on better economic and housing footing, better emotionally prepared, and perhaps happier to take the step into parenthood. In a social context, however, these opportunities arise because of the “expansion of university education, the rise in women’s [skilled] labour participation, higher partnership instability, economic uncertainty and unemployment in young adulthood, as well as a diffusion of values and

¹⁰¹ Callahan, D. 2012. *The choice bazaar*. Posted on Friday, October 26th, 2012; <http://blog.oup.com/2012/10/philosophy-ethics-of-choice/>.

¹⁰² For a discussion, see: Sobotka, op. cit. note 79. It should be noted that, in this report, we have not separated the various cultural and religious positions; it is for each group or community to work out their own position in respect to the permissibility of the procedure.

lifestyles not compatible with parenthood”.¹⁰³ These conditions are what we would expect shape communities and form social trends.

When individual choice is factored into a social trend, there is a chance that it could impact the demographics *and* values of the population. ARTs already contribute significantly to the observed number of births and birth rates among older women (and certainly of those beyond the age of 40). Egg freezing may therefore impact on ‘traditional’ ART methods and shape population demographics. In the following, we consider some of the arguments that may influence elective egg freezing policies.

2.4.1 Commercialisation and Commodification

One of the problems with unfettered ‘freedom of choice’ (see 2.3.4, above) is that it opens up commercial enterprise to less welcome paths of commercialisation and commodification. As Winston writes: “Infertility treatment can be both very costly for patients, and highly lucrative for its practitioners. The combination of these three instincts – the desire to have one's own child, the wish to be a leader in the field and, above all, commercial avarice – is a potentially explosive mixture.”¹⁰⁴

Commercialisation may be regarded as the “effect on the characteristics of a product or activity of supplying it exclusively or predominantly on commercial terms rather than on some other basis, such as informal exchange, mutual obligation, altruism or love, or feelings of service of obligation.”¹⁰⁵ Some argue that it is to be resisted because medical procedures – surgery, drugs, and novel technologies – are increasingly employed, not to treat actual maladies, but to fulfil patients’ irrational requests, re-label traits as conditions that need to be treated (‘medicalisation’; see 2.1, pp. 18-19), enhance normal human capacities (see next section), and to create a potentially exploitative market in existing and dubious health interventions. Overly commercialised societies, therefore, are geared to benefiting the interests of commerce rather than actually addressing health *or* social issues: for some, this is the negative side of the ‘reproductive business’.

¹⁰³ Sobotka, op. cit. note 79.

¹⁰⁴ Winston, op. cit., note 41.

¹⁰⁵ Hirsch, F. 1976. *Social limits to growth*. Harvard. Harvard University Press. p. 87.

Similarly, it is argued that the commodification of certain goods leads to their degradation, and eventually this impacts negatively on broader human values. Sandel, for instance, writes that the effect of:

Putting a price on the good things in life can corrupt [, ‘degrade’ and ‘demean’] them. That’s because markets don’t only allocate goods; they express and promote certain attitudes toward the goods being exchanged. ...But our reluctance to engage in moral and spiritual argument, together with our embrace of markets, has exacted a heavy price: it has drained public discourse of moral and civic energy, and contributed to the technocratic, managerial politics afflicting many societies today.¹⁰⁶

In *strict* market societies, theoretically at least, inequity inevitably follows market goods: if you can’t pay for something, then you just can’t have it – you perhaps lose out to those with more purchasing power (or worse), and markets cannot – nor want to – correct this. This is a serious concern in medical care in general, where health access might be seen as a right rather than an ability to pay. For Sandel, this is a problem of ‘unfairness’ in health systems under conditions of inequality; goods become *luxuries* only affordable by some, and this makes some of them – including health – inappropriate for markets.¹⁰⁷ Sandel’s arguments, in one way or another, resist any appeal to a primarily economic model of ethics; although it requires a wide-ranging view to oppose commerce in general and the forces behind this – the processes of consumer transactions, wealth accumulation, and marketplace rules and laws.¹⁰⁸ Realistically, then, one has to be more specific in challenging economics *in* health care: for example, the privatisation of the prescription of medicines, or professional conflicts of interest, might warrant specific analysis. In a potential ‘egg market’ (which already exists in some jurisdictions), we might be concerned by the forces that “lubricate fertility tourism... responsible for exacerbating the relative disadvantage of poor and powerless women in destination countries, thereby creating the conditions for ‘bioavailability’, that is, the willingness to exchange body parts for cash.”¹⁰⁹ More broadly, we might be concerned about

¹⁰⁶ Sandel, M. 2012 What isn’t for sale? *The Atlantic* February 27.

¹⁰⁷ Sandel, M. 2012. *What money can’t buy: The moral limits of markets*. New York. Farrar. Straus and Giroux.

¹⁰⁸ Swagler, R. 1994. Evolution and applications of the term consumerism: Theme and variations. *Journal of Consumer Affairs* 28: 347–360. For example, one is going to get little argumentative traction in denying the social importance of markets *per se*.

¹⁰⁹ Pfeffer, N. 2011. Eggs-ploiting women: a critical feminist analysis of the different principles in transplant and fertility tourism. *Reproductive Biomedicine Online* 23: 634-641.

‘designer children’ as products of these markets, and how this affects children’s welfare;¹¹⁰ or more generally, how it entrenches the commodification of women’s bodies.¹¹¹

In respect of the current report, then, the social contentions of commodification are based on a presumption that, in all likelihood, elective egg freezing is likely to be a *personal* financial outlay, and therefore (commercial) egg freezing creates trade-offs that have to be made between child bearing and other social-economic considerations. The concern is that access to the elective procedure of egg freezing may lead to inequality on the basis that those who can pay have more opportunities than those who cannot – this is a different concern to that of ‘biological equality’ mentioned in section 2.3.1. Policies may therefore be enacted to control access – we discuss some of the legal options in the last part of this report. One option in respect of health care provision is to use equality (as opposed to unequal access) as a justification for prohibiting the practice altogether (this is just one example of an argument justifying a ban on an activity). However, this option potentially creates the circumstances for people to use economic advantages to take extraordinary measures to access the procedure. Because of globalisation, for example, the prohibition actually fuels the reproductive tourism business, and does not, in fact, address the inequality issue at all. Alternatively, governments may step in to ensure that all people have access basic goods, but elective egg freezing is a borderline health/social choice and is unlikely to be considered as a welfare provision; there may be more scope for subsidised access, but that would depend on the policy incentives that a particular government prioritises (like those we identify in section 2.4.4, below). Lastly, policy could leave open of the option to *purchase* the procedure as a personal outlay and expect market forces to do the levelling. Given the arguable inability for markets to do such work (that in fact markets guided only by the ‘invisible hand’ do not lead to socio-economic equilibrium, as argued by Sandal), this may lead to potentially unwelcome trade arrangements – that is a morally disreputable market in eggs;¹¹² and, if a *laissez-faire* approach is taken, it may lead to a spiralling of uncontrollable practices and risks significant harms to the consumer and potentially future children born as a result.

¹¹⁰ Fox, D. 2008. Paying for particulars in people-to-be: commercialisation, commodification and commensurability in human reproduction. *Journal of Medical Ethics* 34: 162-166.

¹¹¹ See: Davis, D. 2009. The parental investment factor and the child’s right to an open future. *Hastings Center Report* 39: 24-27; Shanley, M. 2002. Collaboration and commodification in assisted procreation: Reflections on an open market and anonymous donation in human sperm and eggs. *Law and Society Review* 36: 257-284.

¹¹² The argument, common in the debate on organ trading, is that some human parts should not become commodities because of the risks to vulnerable people. See for example Campbell, A.V. 2009. Body futures. In *The body in bioethics*. London. Routledge-Cavendish. pp. 27-54.

These concerns have been raised before about other ARTs. As a commercial enterprise, elective egg freezing may indeed create new pressures brought on by advertising and the lack of oversight of clinics (see section 3.1.2). If this reproductive option becomes routine and widely available, young women such as those starting out in their careers may feel compelled to freeze their eggs in case childbirth is delayed. The costs of egg freezing and storage themselves may increase their or their families' financial burden, even if artificial conception via IVF – which too remains expensive for many people – is not eventually sought.¹¹³ It is clear, nevertheless, that many, if not most societies are already well down the consumerist path, and that 'the reproductive business' has not been held back by strong communitarian values.¹¹⁴ Perhaps, however, these markets require closer scrutiny.

2.4.2 *Enhancement*

One growth area in biotechnology has been in so called 'enhancement' technologies – products and interventions accessed outside of mainstream medicine to make users 'better than well'.¹¹⁵ Because of technologies, we can perform better and (do) live longer, and this opens up opportunities beyond human 'species norms'. Often, enhancement has been discussed in relation to individuals who benefit from using technologies, like drugs to improve some aspect such as cognition. In this respect, the boundaries of female reproductive age, marked by menopause, have remained relatively stable despite incremental technologies, while biologically we are living for longer without necessarily experiencing age-related costs such as failing health. It might therefore be ethical to use technological means to allow reproduction to 'catch up'.

However, there is also a case made for 'social enhancement': the sum of individual enhancements may benefit a collective interest.¹¹⁶ *Social* enhancement here refers to the expected benefits to a user, multiplied by the number of people that use the technology – in this utility calculus, an egoistic benefit becomes a social benefit. For the advocate of

¹¹³ In section, 3.1, below, we suggest that because of this, if the procedure is permitted for elective purposes then it ought to be regulated to ensure proper information is provided and to avoid exploitation or the drop in clinical standards by commercial entities.

¹¹⁴ Spar, D. 2006. *The baby business: How money, science, and politics drive the commerce of conception*. Boston, Massachusetts. Harvard Business School Press.

¹¹⁵ Elliot, C. 2003. *Better than well: American Medicine Meets the American Dream*. New York. Norton Paperback.

¹¹⁶ For an overview and critique of this argument, see: Capps, B. Nielsen, L. and Stirrat, G. 2012. A brief critique of two claims about the social value of biotechnological enhancements. *Asian Bioethics Review* 4: 259-271.

enhancement, it follows that societies can be changed for the better if more people use them.¹¹⁷ Thus, an extended fertility range enabled by elective egg freezing might manifest as a social enhancement by changing for the better current population dynamics, such as a more productive and inclusive workforce. This technology thereby becomes socially accepted. As one author wrote:

[ART] ...reduces infertility and natural conception to the same level of insufficiency. Infertile women's nature is insufficient because of their limitation to conceive; natural conception is insufficient because it cannot guarantee the aspired outcome, which is the birth of a (fit) child. In both cases, nature needs "the helping hand" of medical and technical assistance to overcome its deficiency. This does not only legitimize ART, but it "naturalizes" it.¹¹⁸

Plausibly then, social changes in reproductive health demographics brought about by technologies could be considered as 'social enhancements' to the 'plight' of *all* women of reproductive age. Interventions that *change* reproductive patterns, such as social reforms that led to equality in the workplace, or better nutrition and health care, have also impacted expectations for timing of parenthood. These are plausibly the same kinds of 'enhancement' – welcome social changes – that radical technologies might bring about. (For example, it is claimed that a 'smart pill' is no different to extra tuition.) Various technologies have allowed other demographic changes to occur and this justifies further expansion such as to egg freezing.

For some, however, a technology-driven evolution of society is something to be far more cautious about. The difficulty, as discussed in depth in the bioethics literature, is how any positive and negative changes from a subjective reference point are to be ethically assessed. Not all 'enhancements' can possibly be good for everyone given the personal and social contexts of such decisions; it is, therefore, impossible to say enhancements are categorically good. Moreover, while technologies are often seen as positive developments, they often have less welcome 'other' effects which count against the causal link between egoistic choice and social benefits. A right to use a particular technology, for instance, should not create a society

¹¹⁷ See: Julian Savulescu's lecture on '*Unfit for life*' (2009), at: <http://blip.tv/slowtv/genetically-enhance-humanity-or-face-extinction-julian-savulescu-p2-2732453>

¹¹⁸ Franklin, S. 1995. Postmodern procreation: A cultural account of assisted reproduction. In: *Conceiving the new world order: The global politics of reproduction*, ed. Ginsburg, F. and Rapp, R. Berkeley. University of California Press, pp. 323-345, p. 334.

that loses sight meaningful (human) interactions and obligations to future generations.¹¹⁹ In this respect, the choice to use a technology may not be one that is ethically defensible; and, even if it is, societies may want to limit choices that lead to the concerns expressed in the section on commodification (2.4.1).

Yet, just as we should not categorically embrace technologies on the grounds of questionable utility, we should also not be unquestionably sceptical of their benefits. Thus, we might find a middle ground of *regulated* technology as something to be welcomed. It is when technologies and visions become divisive in respect of the preconditions of moral communities that we should pause, reassess, and potentially take a step back.¹²⁰ It is clear that ARTs are here to stay (and will probably continue to gain incremental acceptance within social norms);¹²¹ but how far our lives can and will be changed by accepting such technologies, however, is unknown.

2.4.3 The 'Ideal' Family Unit

Like other ARTs, elective egg freezing may undermine childbearing and family formation as informed by traditional notions of these human activities. One of these views is that the ideal time to have children is in one's mid-twenties. This might be informed by the argument that the relatively young, nuclear family provides the best circumstance for there to be sufficient energy and time to care for the child. Some medical opinions indicate that for overall health reasons, procreation could be encouraged at a maternal age of 20-35 years of age.¹²² For others, parents should not bear a child when they might not see him or her reach puberty or go to university. Likewise, children should also not be saddled with the prospects of caring for their aged parents just when they are starting out in life. This may also be a social

¹¹⁹ Habermas, J. 2003. *The future of human nature*. London. Blackwell.

¹²⁰ Brownsword, R. 2008. *Rights, regulation and the technological revolution*. Oxford. Oxford University Press.

¹²¹ Brownsword writes "one senses there is an incrementalism about the regulation of reproductive technology and choice. It is not as though regulators take one step forward but sometimes two steps back; if they take one step forward, the next two will also be forward". He cites the incident of the UK Court of Appeal's acceptance of 'saviour siblings'; and we might add that the ASRM and ESHRE Reports as further examples of taking the path to further liberalisation. It was not the case, in matter of fact, that precautionary reasoning about the risks deterred them from expanding the uses of egg freezing; Brownsword, R. 2004. Reproductive opportunities and regulatory challenges. *Modern law Review* 67: 304-321, p. 319.

¹²² ASRM, op. cit. note 1.

response to the population challenge that some countries with low birth rates are experiencing.¹²³

Goold and Savulescu argue, however, that the rise in maternal age may be a good thing:

There are reasons to think it is actually better for women to have children *later* in life. Many women who have children when they are older will have higher incomes. While they face a higher opportunity cost in terms of lost earnings if they leave employment to have children later, this will often be offset by greater job security if they have sufficient experience either to retain a good job or to be sought after by other employers on re-entering the labour market. Their higher earnings also give them a greater capacity to pay for childcare, better enabling them to remain in full or part-time employment. Empirical evidence suggests that older women often have more positive experiences of pregnancy than their younger counterparts, because they are more prepared and more committed to the ‘parenting experience’. They also show lower rates of post-natal depression, although this finding is contested.¹²⁴

In addition, an observational study in the UK has shown an association between older maternal age and children having fewer unintentional injuries requiring medical treatment; fewer hospital admissions; better language development; and less social and emotional difficulties.¹²⁵ In any case, taken to its logical conclusion, accepting an ideal time for childbearing as an argument against elective egg freezing would imply that people should not attempt to have any children in their late 30s or early 40s even by natural conception. And, if the ideal family argument is a necessary and sufficient one (like other naturalistic arguments), then all other ARTs potentially undermine the traditional family; that is, the union of man and woman by marriage “as the proper and appropriate basis of having children.”¹²⁶

¹²³ Parliament of Singapore, op. cit. note 5.

¹²⁴ Goold and Savulescu, op. cit. note 66; Cf. “A great deal of research has focused on substantiating the independent and causal relationship between maternal schooling and child health. Reviews of surveys and census data from developing countries and econometric analyses of cross-country macro-data have confirmed women’s education as the most important determinant of child mortality, in which estimates show that each additional year of schooling is associated with a 5 to 7% reduction in child death”; Lutz and Samir, op. cit. note 83.

¹²⁵ Sutcliffe A., Barnes J., Belsky, J., Gardiner, J. and Melhuish, E. 2012. The health and development of children born to older mothers in the United Kingdom: Observational study using longitudinal cohort data. *BMJ* 345: e5116.

¹²⁶ Kindregan, C. and McBrien, M. 2006. *Assisted reproductive technology: A lawyer's guide to the emerging law and science*. 1st edition. American Bar Association. Section of Family Law. p. 2.

It should be acknowledged that there is far more scope for people to be ‘good’ parents: we are simply living longer and healthier (see previous section). The makeup of many modern families is already vastly different from the ‘nuclear’ ideal, and, we might add, there is a plausible case for changing, or at least putting less emphasis on this model.¹²⁷ In his survey on the motivations of those who were undergoing elective egg freezing, Gold *et al.* found a number of women intimating that “they would eventually consider thawing the oocytes, fertilising their eggs with donor sperm, and consider single parenting after the age of 40.”¹²⁸ Vallejo *et al.*’s analysis of the psychological aspects of women undergoing elective egg freezing found that younger patients (below age 37) were more receptive to becoming single mothers with their frozen eggs than older ones (at or above age 38): about 62% versus 54% accordingly.¹²⁹ The permissibility of elective egg freezing therefore may not just depend on the marital status of the woman, but also the intentional timing and use of those eggs vis-à-vis IVF outside specified relationships.

2.4.4 What are the Social Benefits and Risks?

The future social *impact* of elective egg freezing is difficult to ascertain. Feminist literature points to the use of reproductive technology to allow women to adapt to a male-dominated society, or, as mentioned earlier, to be forced to mould into patriarchal frameworks; however, the literature emphasises that perhaps society should be more accommodating of different demographics rather than requiring intrusive (medicalised and commercialised) interventions as social levellers. These critiques are often informed by observations that illustrate the reluctance to address or ignorance of educational and workplace problems, and to encourage social mechanisms rather than ‘technological fixes’. Opposition to the ‘reproductive business’, especially to the potential manipulative and dishonest marketing and misinformation, looks at the perverseness of interventions – this applies across all ARTs – to become routine without long-term studies and solid data on efficacy and safety: the advertising already evident on the Internet attests to the use of persuasive terminology to encourage a market of egg freezing. In this respect, IVF is one of the significant *on-going*

¹²⁷ See: Cutas, D. and Chan, S. eds 2012. *Families – beyond the nuclear ideal*. London and New York. Bloomsbury Academic.

¹²⁸ Gold, *et al.* op. cit. note 80.

¹²⁹ Vallejo, V., Lee, J., Schuman, L., Witkin, G., Cervantes, E., Sandler, B., and Copperman, A. 2013. Social and psychological assessment of women undergoing elective oocyte cryopreservation: A 7-year analysis. *Open Journal of Obstetrics and Gynecology* 3: 1-7.

experiments of our time; despite health concerns and growing clinical data,¹³⁰ it continues to be offered in most countries and has been normalised in many cultures and religions.¹³¹

Elective egg freezing may, however, help circumvent some social problems of currently accessible ARTs. It may decrease the number of unused embryos frozen after an IVF process, which is important to those with religious or ethical concerns with their disposition; and may help avoid legal entanglements that could arise over the control and use of frozen embryos.¹³² It may also decrease the reliance on egg donors, whether altruistic or paid, and alleviate concerns over the risks they undertake under market conditions.¹³³ Counselling of women inquiring into elective egg freezing may also increase understanding of age-related fertility decline and its significance. Gold *et al.*'s survey indicated that those who had undergone elective egg freezing would likely have done so earlier had they known about the option before.¹³⁴ Should the mean age of elective egg freezing drop with acceptance and public awareness of this use of the technology, younger eggs might be used, which might improve ART outcomes, and reduce the likelihood of involuntary childlessness.

The 'big' social question, however, is how allowing elective egg might impact on demographics, for example, a country's total fertility rate (TFR). It is well known that in developed countries, where affluence and education are the norm, population fertility is decreasing. The global population problem is a complex world issue; while some are arguing for measures to reduce global fertility,¹³⁵ other individual countries have developed population policies to reverse declining parenthood. It is difficult to predict whether egg

¹³⁰ Sifferlin, A. 2012. IVF Linked to more birth defects. *Time* Oct. 22; Available at: <http://healthland.time.com/2012/10/22/ivf-linked-to-more-birth-defects/#ixzz2Tuy8Qwss>

¹³¹ ARTs, including IVF, have developed from an experimental status to clinical norm - but even at its origins, there was consternation at the implications for society. Commenting some time ago on the UK governments debates leading up to the Human Fertilisation and Embryology Act, one commentator wrote: "Progress is the door left slightly ajar", but that also allows 'commercial exploitation' of technologies to overcome 'moral sentiments'; Imber, J. 1987. Ethical elites: Artificial reproduction in Great Britain. *Contemporary Sociology* 16: 228-230, p. 230. Also see, on the history of IVF technology and some clues to the public response, see: Fauser, B. and Edwards, R. 2005. The early days of IVF. *Human Reproduction Update* 11(5): 437-438; and Cohen, J., Trounson, A., Dawson, K., Jones, H., Hazekamp, J., Nygren, K. Hamberger, L. 2005. The early days of IVF outside the UK. *Human Reproduction Update* 11: 439-460.

¹³² As highlighted in the UK case: *Evans v. The United Kingdom*. Application no. 6339/05.

¹³³ Rybak and Lieman argue that "Those reluctant to endorse the practice of elective oocyte cryopreservation based on safety considerations must justify why they think young egg donors, altruistic or entrepreneurial, may assert their prerogative to assume these small risks and undergo COH [controlled ovarian hyperstimulation] with oocyte retrieval, but women seeking to maximize their chances of autologous procreation should not do so." Rybak & Lieman, *op.cit.* note 68, p. 1510; see also Cohen, C. 2001. The interests of egg donors: Who is deceiving whom? *American Journal of Bioethics* 1: 20-21.

¹³⁴ Gold, *et al.*, *op.cit.* note 80.

¹³⁵ Lutz & Samir, *op. cit.* note 83.

freezing would have an impact on population dynamics. It might simply be the case that few women are prepared to undertake the potential trauma and cost to warrant undergoing the procedure, or cannot justify the risks (recall the misnomer of insurance that we've already mentioned). Access to the procedure may also, as we have indicated above, further challenge 'family aspirations' thus contributing to the decline of the TFR.

However, if we go back to the causes of declining TFR we might uncover more positive key trends. Interestingly, a recent report from Singapore revealed a high desire to have children. Of those surveyed, 83% intended to get married, and 84% of them intended to have children once married.¹³⁶ Not only are people willing to have children, but they are planning to do so. What could explain delayed parenthood if people have such plans? Lutz and Samir present a case for lowering expectations of the TFR:

Almost universally, women with higher levels of education have fewer children, presumably because they want fewer and find better access to birth control... There are many reasons to assume that these pervasive differentials are directly caused by education, which enhances access to information, changes the motivations for behavior, and empowers people to better pursue their own preferences, although causality can only be proven for specific historical settings.¹³⁷

They argue that promoting education in zones in which raising a child is a considerable burden might lower the TFR. In places like Singapore, this phenomenon has arguably already occurred because of high literacy and university access.¹³⁸ Lutz and Samir argue that (in a general context) this is a consequence of having "greater autonomy in reproductive decision-making, more knowledge about and access to contraception, and [being] more motivated to use contraception because of the higher opportunity costs of unplanned childbearing."¹³⁹ Education and access to technology, therefore, are at least some of the potential factors.

¹³⁶ National Population and Talent Division. 2013. *A sustainable population for a dynamic Singapore: Population White Paper*. January. Singapore. Prime Minister's Office. Available at: <http://population.sg/>. In contrast, Lutz & Samir (op. cit., note 83), write: "Empirical studies show that better educated women consistently want fewer children". Singapore, it should be noted, has a high literacy rate; see *infra*. note 145.

¹³⁷ Lutz & Samir, *Ibid*. References from original omitted.

¹³⁸ However, this might be a phase: "If education is also factored in, the picture looks less dramatic. In most countries, the elderly of the future will be better educated than the elderly of today. Assuming that the better educated at any age have substantially lower disability rates, this improving education factor may partly or even fully compensate for the aging factor. But because there are still many unknowns, these interactions between education and health are an important field for more research." *Ibid*. References in original omitted.

¹³⁹ Lutz & Samir, op. cit. note 83.

Therefore, one might find that creating an environment where there is more scope for parenthood to fit into ideals of education, career, or the need for stability in a relationship, might do the trick. This latter option may, however, require addressing traditional frameworks for parenting.

Analysing women's reasoning and experiences regarding advanced maternal age and delayed childbearing, Cooke *et al.* found that:

[W]omen still choose to pursue education and career in order to achieve stability and independence. This is unlikely to change. Although Governments can promote flexible working arrangements and maternity/paternity benefits, in practice these schemes will not influence delayed childbearing until women are able to make informed choices. Women will then need to weigh up the evidence and balance the choice of career advancement and establishing independence with the possible risks of delayed childbearing.¹⁴⁰

There is a difference between allowing people to have a choice, and encouraging them to take it. And for many, the aspiration to start a family is not redundant; it just takes on a different form: one that allows women to aspire to other goals as well. Moreover, while many perceive technologies as principally enabling choice, questions remain as to who actually benefits through access and who will be excluded.¹⁴¹ This is particularly salient in the context of elective egg freezing: while it might represent an opportunity to some, for others, lack of access and information might not equate to a realistic choice.

Finally, the elective egg freezing debate comes at a time of great demographic change in many societies and unprecedented technological advancement. For some, it is an epoch of profound transformation of the human condition.¹⁴² While many claims about 'human enhancement' may be exaggerated, one cannot escape the intricate ways in which technologies are both influencing personal development, and intertwined with cultural and social upheaval. These two impacts need not be incompatible. The option of elective egg freezing can be considered by women within social policies that inform women and men

¹⁴⁰ Cooke *et al.*, op.cit. note 88, p. 1327.

¹⁴¹ Wolbring, G. 2009. 'Therapeutic', enhancement enabling, assistive devices and the UN Convention on the Rights of Persons with Disabilities: A missing lens in the enhancement regulation discourse. *Journal of International Biotechnology Law* 6: 193-206.

¹⁴² Bostrom, N. 2005. Transhumanist values. *Journal of Philosophical Research* 30: 3-14.

about age-related fertility decline, and at the same time, encourage earlier childbearing and family formation. As the ESHRE sums it up: “The precise societal implications of fertility preservation for ovarian ageing not only depend on the number of women who will make use of this option, but also on how having a stored reserve will affect reproductive decisions and possible outcomes.”¹⁴³ How elective egg freezing affects a given society will also depend on the messages given across in policies, and, ultimately, how it is regulated. We consider some regulatory issues in the final sections (3).

We conclude this section with the following observation: if societies want to encourage people to have children and early in their life, they can consider many policies to implement. One of these would be to prohibit egg freezing. But this takes us back to the issue of choice: if it becomes an either/or question, then women who want children are likely to make the one choice that suits their strongest desires at that time, thus potentially missing out on an education or career for the purpose of parenthood or *vice versa*. If, however, more reproductive choices are opened up, then there is greater scope for choices to be synchronised; and let us not forget that education and careers are equally important contributions to society. What societies may experience is an upsurge in family planning that aims to make having children compatible with a chosen life plan. Equally, however, measures that encourage work environments that are family-oriented (for example flexible work arrangements, paternity leave and childcare access), and possibly campaigns to change people’s attitudes towards careers and parenthood, might work. Ultimately, however, whether social measures can influence childbearing and its timing may depend on whether due regard is given to reproduction as a choice and women’s identity issues.

¹⁴³ ESHRE, op. cit. note 2, p. 1234.

3. Considerations if Allowing Elective Egg Freezing

3.1 Some Legal Issues

3.1.1 Policy Variation

The regulation of ARTs in many jurisdictions is in flux. At one end of the spectrum countries are undergoing incremental liberalisation of fertility laws and policies, opening up access to procedures for most adult demographics. The UK allows elective egg freezing in *licensed* clinics meeting HFEA standards, as set out in their Code of Practice, but with few restrictions on access to the procedure.¹⁴⁴ Additionally, clinics can offer schemes that enable women under 35 to donate some of their eggs for implantation into a recipient in return for the clinic agreeing to store their remaining eggs for free. In the US, there are no Federal rules governing private clinics offering the service.

In other countries, like Switzerland and Singapore, it is generally understood that ARTs should be carried out only for medical reasons.¹⁴⁵ Elective egg freezing is prohibited because it is outside the standard treatment paradigm. An interpretation of prohibitive policies, as Wunder points out,¹⁴⁶ is that procedures related to egg retrieval and storage could be understood as completely separate from IVF fertilisation procedures. Under this interpretation, so long as fertilisation would only take place with the presentation of sufficient clinical indications for infertility, and in line with other existing restrictions (e.g. age limit for IVF), ‘elective’ egg freezing should not be considered unlawful.

¹⁴⁴ <http://www.hfea.gov.uk/code.html>

¹⁴⁵ Singapore, like other countries, is undergoing reproductive policy changes. Despite traditionally “strong negative social sanctions against out-of-wedlock births” (Yap, M. 2006. Fertility and population policy: The Singapore experience. *Journal of Population and Social Security* (Population) Supplement to Volume 1), Singapore has begun to address fertility issues for demographics outside marriage; see: Chua, D. 2007. Ethical issues in reproductive technology. *The Science in Society Review; A Production of the Triple Helix; The International Journal of Science, Society, and Law* 2: 8-10. It would appear that marriage and child bearing are still valued in Singapore populations (see Yap, *ibid.*), although there is also a realistic appreciation of social constraints (e.g. seeking financial and social stability) and opportunity costs (such as in education and employment) delaying these in individual circumstances. For detailed demographic information on Singapore, see: Saw, S. 2007. *The population of Singapore*, 2nd ed. Institute of Southeast Asian Studies. Singapore. In respect to the debate on elective egg freezing, see: Ng, W. 2012. Freezing the egg to delay motherhood. *The Straits Times*; available at: <http://www.sgh.com.sg/about-us/newsroom/News-Articles-Reports/Pages/FREEZINGtheeggtodelayMOTHERHOOD.aspx>; and Khalik, S. 2012. Singapore eyes on freezing eggs to reverse falling birth rate. *The Straits Times*; available at: <http://www.asianewsnet.net/news-28671.html>

¹⁴⁶ Wunder, *op. cit.* note 34.

Alternatively, a ‘medicalisation’ approach has been taken in Israel, which previously prohibited elective egg freezing (as well as egg freezing for illness-related reasons) due to a ban on egg retrieval from women not undergoing IVF treatment as specified by its Public Health (*In Vitro* Fertilisation) Regulation.¹⁴⁷ This was amended in 2010 to allow egg retrieval from a woman “who is not undergoing infertility treatments, but wishes to preserve fertility for reasons related to age” as an act of *preventive* medicine.¹⁴⁸

Given variable jurisdictions and globalisation of ART services, women can, if they have the resources, travel between countries for elective egg freezing, or, if permitted to do so, bring their frozen eggs out of a jurisdiction in attempts to become single parents through IVF with donated sperm. Due to policy disparity and fertility tourism, considerations may arise as to whether to control transport of frozen eggs. Such an issue is important in light of the possibility of frozen eggs being transported to another jurisdiction that does not regulate or is less restrictive of assisted reproductive services, for example with respect of marital status and pre-implantation genetic diagnosis. In Singapore, ARTs can only be performed for a married woman (up to the age of 45) and with the consent of her husband, whether or not her husband’s sperm is used. With such regulations in place, single parenthood through the means of elective egg freezing/IVF would not be allowed even if elective egg freezing becomes routine.

3.1.2 Oversight of Clinics

One of the more significant legislative considerations should be the liability issues of clinics that offer this elective service (but which we will not go into in any detail because it is a complex issue of law in terms of contract). In an ‘Alpha Consensus’ document about cryopreservation, it was noted that benchmarks for clinical outcomes (i.e. pregnancy, implantation, miscarriage and birth rates) are subject to variables associated with clinical practice.¹⁴⁹ Practice, therefore, is an important determinant of the health risks and future potential for artificial conception. To take just one example, one can only imagine the consternation, and considerable financial loss, upon finding out that one’s eggs had been improperly stored and thus unusable 10 years down the line.

¹⁴⁷ Shkedi-Rafid & Hashiloni-Dolev, op. cit. note 40.

¹⁴⁸ Cited in: *Ibid.*, p. 292.

¹⁴⁹ Alpha Scientists in Reproductive Medicine. 2012. The Alpha consensus meeting on cryopreservation key performance indicators and benchmarks: proceedings of an expert meeting. *Reproductive BioMedicine Online* 25: 146-167.

The UK case of *Yearworth* (also see section 2.3.2, above) might be instructive here. Six men stored their sperm prior to undergoing treatment for cancer in case they proved to be infertile after the treatment. The storage facility failed because of a procedural oversight, and the sperm thawed and subsequently perished irretrievably. The Court of Appeal held that sperm banked at a licensed fertility unit amounted to property: that it was owned by its producer. The Judge concluded that under the law of bailment there is no doubt that the men had a reasonable expectation of control over the future potential use of their sperm, and that, therefore, the facility had a corresponding duty to meet this expectation and had failed to do so.¹⁵⁰ He stated that “it would be a fiction to hold that damage to a substance generated by a person's body, inflicted after its removal for storage purposes, constituted a bodily or ‘personal injury’ to him”.¹⁵¹ So, after stating that “any psychiatric injury was not as the result of any past event but as a consequence of apprehension about a future event, namely apprehension that he might not regain his fertility post treatment”,¹⁵² the court found damages were recoverable under the rules relating to damages for *mental distress* (or actionable distress) caused by loss to property. The loss of one’s eggs stored for future fertility use might fit with the mental distress experienced by these plaintiffs. It is plausible that this precedent might apply to elective egg freezing policies based on the basic premise that any licensed ART facility owes a duty of care in respect of the services it offers in storing gametes.

3.1.3 Informed Consent

A basic tenet of all egg freezing is informed consent. Recognising egg freezing “as an elective fertility preservation strategy that may help [women] to realize their longer-term reproductive goals”, the ASRM outlined the essential elements of informed consent for elective egg freezing.¹⁵³ It therefore recommend that women seeking elective egg freezing as a fertility preservation strategy be given pre-treatment counselling to ensure that they understand the potential benefits, risks and limitations of the procedure, including:

¹⁵⁰ *Yearworth and others v. North Bristol NHS Trust*, EWCA Civ 37 (2009); QB 1. (2010).

¹⁵¹ *Ibid.* para. 23.

¹⁵² *Ibid.* para. 53.

¹⁵³ The Practice Committee of the Society for Assisted Reproductive Technology and the Practice Committee of the American Society for Reproductive Medicine. 2008. Essential elements of informed consent for elective oocyte cryopreservation: a Practice Committee opinion. *Fertility and Sterility* 90 (Suppl. 3): S134-135. This document was issued when the committees still considered egg freezing as experimental, and thus before their guidelines on mature oocyte preservation.

The risks associated with oocyte retrieval;

Clinical specific data and outcomes such as live birth rate per oocyte thawed and embryo transferred in the facility;

Relevant costs;

“The relatively high likelihood that women who cryopreserved oocytes before age 35 never will need or use them, because the large majority of women marry by age 35 and have a relatively low incidence of childlessness”,¹⁵⁴ and

The “potential risks of basing important life decision and expectations on a limited number of cryopreserved oocytes.”¹⁵⁵

In this respect, the consent process should involve the woman specifying how long she wants the eggs to be stored; and whether the eggs are to be used for her own treatment only, or whether they can be donated for someone else’s treatment or used for research or training. One would expect that the donor can vary or withdraw consent at any time, but only before they are donated or used for another purpose. At this point, the woman will of course no longer be a paying consumer, and will now be an ‘altruist’, or, if the sale of eggs is possible, a vendor. It should also be clear what will happen to the eggs should the woman stop paying for the service, and the posthumous disposition of frozen eggs. Posthumous survival of frozen oocytes might occur as those who elect to freeze their eggs might not return to use them to conceive artificially, for example incapacitation or unexpected early death. Some fertility websites direct potential egg freezers to consider such matters.¹⁵⁶

3.1.4 The Requirement for Oversight

The woman’s investment and the technological skill required points to the need for government oversight of elective egg freezing, should it be permitted. Women undergoing

¹⁵⁴ Ibid, S134

¹⁵⁵ Ibid.

¹⁵⁶ For example, see: <http://www.eggfreezingcosts.com/egg-freezing-costs/legal-issues.html>, which advises: “Make sure that any agreements that you sign at the fertility clinic are in agreement with your wishes and your own estate plans. There are numerous questions that an attorney can walk you through. For example, if you died, would you want your eggs donated to a frozen egg bank? Or, would you want a family member to have the option of using them? Do you want your estate to continue to pay for their storage? If a family member or friend conceived a child from your eggs, would you want that child to inherit from your estate? Or, would you want your eggs destroyed or donated for research?”

this procedure need a long-sighted view of the risks and chances of success: these are features not well catered for by purely (free) market forces; elective egg freezing is a difficult financial burden to estimate (what if one never uses these eggs?). As one commentator opines:

Many fertility clinics' websites offer correct information and are upfront about what their potential customers can expect,

in some cases commercial interests can also taint the information that is conveyed and lead to an overly optimistic representation of social freezing. Even the use of terms such as 'fertility preservation' may create the impression that, by freezing oocytes, a status quo is offered as far as a woman's reproductive options are concerned.¹⁵⁷

As noted previously, there are differences in treatment outcomes between clinics;¹⁵⁸ many of the clinics prospectively offering egg freezing services lack experience and expertise in the highly technical procedure.¹⁵⁹ If a clinic is less skilled at this service, it will be some time before consumers find out their 'investment' has failed. It would be essential that high standards with respect to clinical risks *and* laboratory/storage procedures are established from the outset. Licensing and Good Clinical Practice frameworks should be instituted and enforced if elective egg freezing is permitted.

3.2 Age and Elective Egg Freezing

It is of note that women surveyed in their mid- to late thirties are more likely to express an intention to have a child in the future; exactly when that option is more likely to be constrained by the 'biological clock'.¹⁶⁰ The survey might also indicate why the mean age of

¹⁵⁷ Grynberg, M. 2013. Is oocyte cryopreservation for social reasons ethically defensible? Against. *Proceedings of the 1st International Symposium on Social Egg Freezing*, Barcelona, Spain, February 1st. Clínica Eugén. Barcelona. pp. 60-65, p. 64.

¹⁵⁸ See ClearState, page 18, showing the difference between clinical pregnancy rates between two clinics in Singapore. What is interesting is that success rates remain similar in the 20-30 age groups, but change significantly beyond this.

¹⁵⁹ Rudick, B., Opper, N., Paulson, R., Bendikson, K. and Chung, K. 2010. The status of oocyte cryopreservation in the United States. *Fertility and Sterility* 94: 2642-2646.

¹⁶⁰ See analysis in: Sobotka, op. cit. note 79.

women who elect for egg freezing is around 37 years old.¹⁶¹ But eggs frozen at this stage, rather than sometime in the woman's mid-twenties, will result in comparably lower success rates in pregnancy and childbirth. In addition, Sage *et al.* report that "the likelihood of retrieving an optimal number of mature oocytes decreases dramatically with age."¹⁶² Therefore, the "'biggest challenge' in elective egg freezing", Mertes and Pennings write, "is to assure that the procedure [egg freezing] is used by those women who are most likely to benefit from it, namely women whose oocytes have not already considerably aged."¹⁶³ It would be recommendable, therefore, that women should be *informed* that the optimal time to freeze their eggs is before 35.

However, even if information is provided optimally, that is, to woman at an earlier, rather than later age, the demographic effects remain uncertain; empirically, we simply do not know who would take up elective egg freezing. On the one hand, understanding the limitations, risks and costs may be unpersuasive for many. On the other hand, information provision – whether it is advertised by a clinic, or whether it is part of a public health *education* programme – may meet the objection that it amounts to encouragement to undergo the procedure. The study of the regulatory sciences represent a good starting place for such socio-ethical debates (but is a topic beyond the present report), and it is well known that regulatory design can encourage or discourage behaviour just as it can prevent certain actions.¹⁶⁴ A 'soft' regulatory approach that informs potential users of the benefits *and* risks might have a discouraging effect as well. An age range can be set by policy, which would also prevent 'young' women, say at age 25, from incurring unnecessary risks and costs. In Israel, only women aged 30 to 40 are permitted to undergo elective egg freezing. At the very least, one would hope for an environment in which fertility clinics refrain from targeting women above 35 to freeze their eggs.¹⁶⁵

¹⁶¹ Campbell, D. 2009. Fertility experts in moral warning over egg freezing. *The Guardian* 1 February; available at: <http://www.guardian.co.uk/society/2009/feb/01/egg-freezing-ethics-fertility>.

¹⁶² Sage, C., Kolb, B., Treiser, S., Silverberg, K., Barritt, J., and Copperman, A. 2008. Oocyte cryopreservation in women seeking elective fertility preservation: A multi-center analysis. *Obstetrics and Gynaecology* 114(Supp 4): 20S.

¹⁶³ Mertes, H. and Pennings, G. 2011. Social egg freezing: for better, not for worse. *Reproductive BioMedicine Online* 23: 824–829, p.825.

¹⁶⁴ Yeung, K. 2008. Towards an understanding of regulation design. In: *Regulating technologies: Legal futures, regulatory frames and technological Fixes*. Brownsword, R. and Yeung, K. eds. Oxford. Hart Publishing. pp. 79-107.

¹⁶⁵ Mertes and Pennings, op. cit. note 163.

3.3 Who should pay for Elective Egg Freezing?

Finally, we end with a few comments on the costs of elective egg freezing. Who should have access to this technology, as a matter beyond age criteria, is a broader consideration of equity, since cost is going to be a significant determinant of who eventually uses this service.¹⁶⁶

There are three stages to finance: the retrieval of the eggs; the freezing and storage; and the defrosting and IVF procedure. Some consider all of these as one financial outlay for *elective* purposes (and is evidenced by the clinics that currently offer ‘packages’), because, unlike a patient undergoing cancer treatment who freezes her eggs and who potentially maintains her fertility, the former will always require the IVF stage in respect of the stored eggs (of course, she may choose never to use the eggs or may conceive naturally). Others might consider that cost issues can be more nuanced by considering the stages separately.¹⁶⁷ On this understanding, cost-effectiveness of elective egg freezing using decision analysis models has been carried out, with mixed conclusions. An analysis with respect of the Netherlands concluded that egg freezing is more cost effective than IVF, provided that at least 61% of women return to use their eggs and are willing to pay €19,560 extra per additional live birth.¹⁶⁸ In contrast, a US analysis concluded that “no action” (taken on elective egg freezing or ovarian tissue preservation) is the most cost effective strategy for those interested in future fertility,¹⁶⁹ and therefore “the most effective strategy is supporting and encouraging woman to not delay childbearing”¹⁷⁰ Determining ‘cost effective’, however, depends on the woman’s financial and relationship status, and ultimately, her personal goals.

There is also the question of state and private coverage of the procedure. Without wanting to open up the debate on actual health coverage, one can find that different systems will fund

¹⁶⁶ In the ClearState Report, the large expense involved was the most common reason for those ‘unlikely or somewhat unlikely to undergo egg freezing’: 54% of 125; p. 26.

¹⁶⁷ Mertes, H. and Pennings, G. 2012. Elective oocyte cryopreservation: who should pay? *Human Reproduction* 27: 9-13.

¹⁶⁸ van Loendersloot, L., Moolenaar, L., Mol, B., Repping, S., van der Veen, F., Goddijn, M. 2011. Expanding reproductive lifespan: a cost-effectiveness study on oocyte freezing. *Human Reproduction* 26: 3054–3060.

¹⁶⁹ Hirshfeld-Cytron, J., Grobman, W., and Milad, M. 2012. Fertility preservation for social indications: a cost-based decision analysis. *Fertility and Sterility* 97: 665-670.

¹⁷⁰ *Ibid.* On the differences in their conclusions on cost-effectiveness, the authors of the separate analyses jointly noted that “differences in clinical scenarios, cost and probability estimates likely reflect practice differences and interpretation of data that are available in the literature.” See: Hirshfeld-Cytron, J., van Loendersloot, L., Mol, B., Goddijn, M., Grobman, W. and Moolenaar, L. 2012. Cost-effective analysis of oocyte cryopreservation: stunning similarities but differences remain. *Human Reproduction* 27: 3639.

different levels of ARTs:¹⁷¹ what should/should not be funded, and who has access, are ongoing contentions of justice theories and their applications. If permitted, no government support may justifiably be given in recognition of elective egg freezing having no bearing on health (such as some aesthetic surgery). Then, there might be opportunities for the government to incentivise certain behaviours, for example by reimbursing the storage costs for those who utilise their frozen eggs for IVF before a certain age. Policy could even encourage *early* egg freezing (however defined) by offering co-funding for frozen cycles over fresh cycles carried out at a later date, thus discouraging the use of older eggs and opening up the chances for women to pursue career and children (later). This presents a stronger case for lifting existing age limits (e.g. 45 years old and above) on access to IVF treatment in view of the fact that young frozen eggs are used. Although maintaining this age limit might benefit a resultant child in terms of health, as the potential mother would be clinically more suitable to conceive, there is little evidence that gestational age should be the determining factor in terms of future welfare. It remains to be seen whether public funding would incentivise those who had undergone egg freezing and who remain naturally fertile to opt for IVF rather than to conceive naturally.

Of course, a woman who has electively frozen her eggs may go on to become pregnant without need of their use. The circumstances of the use of frozen eggs will be different for each woman. It is, therefore, difficult to ascertain the gains from this process beyond meeting the woman's own goals. Writing anything definitive about the financing of elective freezing is thus tricky because the risks and acceptable minimal chance of a successful pregnancy are defined by the woman herself.¹⁷² As Mertes and Pennings point out, "not all people go to the same lengths to fulfil their child wish."¹⁷³ It is therefore difficult to elect one policy that *all* women would find advantageous – targeted support would inevitably divert funds away from other medical activities; or indeed, one that social commentators would find acceptable given their different perceived priorities. Whether the state should have any role in *supporting* these kinds of decisions, despite the competing claims of population concerns (and incomplete data) and equality of access, remains inconclusive.

¹⁷¹ In Singapore, Medisave may be utilised for ART procedures (\$6000 for first, \$5000 second, and \$4000 for third), and government will co-fund up to 75% for maximum of 3 fresh and 3 frozen ART cycles (total cycles 6). Fertility preservation not covered. Amount in Singapore for one IVF cycle: \$8,000 - \$11,000 at public hospitals, and up to \$15,000 at private centres; available at: <http://articles.stclassifieds.sg/health-beauty-and-fashion/babies-made-in-malaysia/a/82854>.

¹⁷² Mertes and Pennings, op. cit. note 163.

¹⁷³ Ibid, p. 827

4. Concluding Remarks

We believe that the debate on the widening scope of ARTs is just beginning, and the ethics of elective egg freezing is just one technology to grapple with. Mertes and Pennings capture this particular debate in the following: either “social freezing will bring about more heartache than happiness; one can ‘pull the plug’ on social freezing and label it ‘unethical’... or, preferably, one can try to promote oocyte cryopreservation for those women who are most likely to benefit from it and discourage or refuse those women who are the least likely to benefit from using the procedure.”¹⁷⁴ It is difficult to establish who will or will not benefit from this technology. Any conclusive judgments about future social trends cannot be made as it is hard to tell whether elective egg freezing would become a common or fringe option.¹⁷⁵

In our discussion, we cover ‘moral’ (primarily relating to choice), ‘social’ and ‘scientific’ considerations. Prohibitive policies seem to be more grounded in the social argumentation we have outlined; the legislative response, in this respect, would have to primarily grapple with the circumstances of fertility tourism and providing other options for women to establish the kinds of families they want. The grounds for a particular permissive policy, on the other hand, would need to be worked out. Principally, a permissive approach calls for introspection and social scoping beyond the stereotypical opposition between incompatible ‘social’ choices for women – and address what we have called the moral arguments. Cancer or other clearly definable illnesses indicate relatively straightforward policies on egg freezing, and might force the matter for an individual’s choice to undergo the procedure. However, the absence of a suitable partner or the pressures of steady employment might also be involuntary.

It therefore seems somewhat harsh, as a matter of ethics, to conclude for example, that a 35-40 year old woman who has not found a suitable partner should accept her reproductive fate. The desire for economic security might also be a persuasive reason to allow access to the technology: fertility preservation, while a complex biological and social imperative, is also a choice about personal ambitions that might benefit social markers as well (stable family life for example). This does not imply that society owes every woman the right to become a

¹⁷⁴ Ibid, p. 826.

¹⁷⁵ ClearState Report: While 71% of 407 surveyed would consider IVF if the need arose, only 22% of 410 were ‘likely’ or ‘somewhat likely’ to opt for elective egg freezing; 31% were ‘unlikely’ or ‘somewhat unlikely’ to consider the option; pp. 17 & 26.

genetic, gestational, and social mother regardless of her circumstances. And indeed, we would point out that loss of or damage to eggs does not preclude motherhood; ‘other mothering’ options such as adoption and egg donation are possible, although whether these are legal or culturally acceptable is another question. While there is an indisputable case for respecting basic reproductive freedom for all women, there are social determinants that each society defines as to the limits of this – as with any other – freedom.

While we have focused on the ethics of egg freezing, we have not touched upon the informational aspects of ARTs. In passing, we acknowledge that there is much room for education on ARTs in general. There does seem to be a knowledge gap that ought to be properly addressed.¹⁷⁶ Gameiro argues that:

Present research shows that... most women lack fertility knowledge and vastly overestimate the success of assisted reproductive technologies. For instance, in a study with 3345 Canadian women between the ages of 20 and 50, 57% of these women believed that, for women over 30 years old, overall health and fitness level is a better indicator of fertility than age, and 65% that prior to menopause the Assisted Reproductive Technologies can help most women to have a baby using their own eggs.¹⁷⁷

As this author observes, “almost nothing is known about women’s perception of oocyte cryopreservation and their motivations to use it.”¹⁷⁸ On the one hand, considerations such as the clinical risks of ARTs; problems in gestation and delivery; prolonged stress, possible disappointment and other psychological harms; and the potential health implications for any future child, may add to *unrealistic* expectations and *unperceived* economic and healthcare burdens. On the other hand, ARTs offer hope to many. The importance of educating the public about these new technologies, the opportunities, financial outlays and risks, therefore, cannot be understated. A paper, written by an anonymous author, captures the ‘myths and

¹⁷⁶ The ClearState Report *suggested* also that there were unreal expectations: of 91 surveyed, in response to the question whether elective egg freezing will “Preserve my fertility with my younger eggs to increase chances of pregnancy later in my life”, 65% agreed; and 66% indicated that freezing eggs was a form of ‘insurance’ or ‘safety net’ in case of health problems in the future that may affect or damage fertility (p. 26).

¹⁷⁷ Gameiro, S. 2013. Is there a need for oocyte cryopreservation: The psychological viewpoint. *Proceedings of the 1st International Symposium on Social Egg Freezing*, Barcelona, Spain, February 1st. Clínica Eugén. Barcelona. pp. 33-37, p. 34.

¹⁷⁸ *Ibid.* p. 35.

misunderstandings' of delayed childbearing through one personal experience.¹⁷⁹ Her narrative – which was described as traumatic and costly, and was ultimately unsuccessful – forms the basis for her 'modified public health message' that addresses a "deficiency of information": while ARTs are an opportunity for many, some people may nevertheless not benefit from them, and women and men deserve to know this. Our report, therefore, should be seen as a contribution to future public education on ARTs.

To sum up: Future egg freezing policies ought to address the safety, welfare, and identity issues of women, the health and welfare of future generations, equality issues, and social advantages all at the same time. We have been careful to emphasise that egg freezing in no way guarantees future pregnancy. From a regulatory perspective, it is important to bear in mind that egg freezing – whether provided to women as a clinical or elective option – is not an isolated activity, and falls within a whole ambit of ARTs. Not only are there the closely associated medical technologies of IVF to regulate, but also the wider social contexts of education, work, and family planning policies, social attitudes, and complex moral values to consider. Prohibiting or otherwise allowing elective egg freezing will have knock-on effects to other regulatory provisions, and in this respect, requires careful evaluation and scoping.

¹⁷⁹ Everywoman, J. 2013. Cassandra's Prophecy: Why we need to tell the woman for the future about age-related fertility decline and 'delayed' childbearing. *Reproductive Biomedicine Online* <http://dx.doi.org/10.1016/j.rbmo.2013.03.023>.

科技部補助專題研究計畫出席國際學術會議心得報告

日期： 103 年 8 月 30 日

計畫編號	103-2410-H-007 -020 -MY2		
計畫名稱	建置「人工生殖」專題法律與社會跨國資訊平台之研究		
出國者姓名	林昀嫻	服務機構及職稱	國立清華大學科技法律研究所副教授
會議時間	2014年8月21日至24日	會議地點	峇里，印尼
會議名稱	(中文)第20屆世界醫療法大會 (英文) the 20th World Congress on Medical Law		
發表題目	(中文) 代理孕母法律議題之發展 (英文) Taiwan's Legal Developments on Gestational Surrogacy		

一、參加會議經過

本研討會係由世界醫療法學會 (World Association for Medical Law) 每兩年舉辦一次，參與的學者來自醫療法、公共衛生法、醫療倫理等領域。為期4天的會議包含主題演講、工作坊、口頭報告場次及壁報展示等，共有數百位學者參與，主要來自歐洲、美洲與亞洲。本人於2013年6月13日收到論文摘要獲審核通過的信函，獲邀進行口頭報告。

本人於2014年8月22日抵達峇里，本人的報告被安排在8月24日的第23場次。由於參加者眾，本場次共有7位學者發表論文。同場報告的有來自荷蘭阿姆斯特丹大學、法國 Institut Universitaire de France、以及澳洲衛生部門的學者專家，另有三位印尼本國的醫療法學者。講者與聽眾互動熱烈，討論的議題相當聚焦而有深度。

二、與會心得

本人第一次參加世界醫療法大會，發現與會者的國籍與觀點多元，也聽到多篇有深度的論文報告，收穫豐富。本人口頭報告結束後，各有來自美國、芬蘭、及奈及利亞的學者或律師發表評論及提出問題，均對於我國的代理孕

母政策發展表示高度興趣，尤其對我國試圖以「審議式民主」作為解決代孕爭議的方式印象深刻。

三、發表論文摘要

Abstract

Practices of different kinds of artificial reproductive technologies are allowed in Taiwan in accordance to the Artificial Reproduction Act. On the contrary, surrogacy motherhood has not been legally granted since it was banned in 1996. However, there are infertile people who need help to have children of their own, particularly when they do not fit in the requirements in Artificial Reproduction Act to use artificial reproductive technologies. In response to the urgent requests for legal surrogacy, the Department of Health (renamed as the Department of Health and Welfare since 2013) had held two civil conference to develop and improve a draft of surrogacy legislation. Nevertheless, no promulgated legislation has been designed for surrogacy until now.

In the context of surrogacy, controversies and challenges from the aspects of law, ethics, and gender are intertwined. How could, or how did, the civil conference help clarify the complex case of surrogacy? Although the scheme of civil conference is developed along the theory of deliberative democracy and is designed for providing solutions to controversial issues, would such scheme satisfy the challenge from surrogacy issue? On the other hand, the theory of communication and action by Juergen Habermas is often employed to analyze the interactions and opinions in a civil conference, and it could generally probe into the linchpin. But when it comes to analysis of an issue highly relevant to gender, such as legislation and practice of surrogacy, how should we adopt the theory of communication and action?

This research has found out that the civil conference could represent the legal and moral consciousness shared by lay people, and thus provide important guidance to the legislators. Furthermore, when an ideal and valid civil conference pictured in the theory from Habermas should be built in an environment where provides every participants equal opportunities to communicate, the environment of a civil conference about surrogacy should be more gender-aware to be an ideal and valid one.

四、建議

這次到峇里參加國際研討會，發現當地的 Nusa Dua 已經規劃為高級飯店與國際會議專門場所，設施新穎且安檢嚴格，近年大型國際研討會紛紛在此舉辦，呈現旺盛活力。相對而言，國內法律與政策相關的國際研討會數量不多，大型研討會更是少之又少。主辦研討會對於學術交流與提升均有助益，尤其擴大國際能見度、加強影響力。期待在科技部的支持下，將來有機會在國內舉辦大型的醫療法國際研討會。

五、攜回資料名稱及內容

本次會議攜回大會手冊一本、論文摘要光碟一張、以及世界醫療法協會的介紹。

六、其他

無

科技部補助專題研究計畫出席國際學術會議心得報告

日期： 104 年 3 月 11 日

計畫編號	MOST 103-2629-H-007 -001 -		
計畫名稱	非醫療因素冷凍卵子之法律與生命倫理議題研究		
出國者姓名	林昀嫻	服務機構及職稱	國立清華大學科技法律研究所副教授
會議時間	2015年3月1日至5日	會議地點	瓦雷塔，馬爾他
會議名稱	國際人文社會科學研討會 International Conference for Social Sciences and Humanities		
發表題目	東亞脈絡下的性別平等專責機構 Gender Equality Agencies in East Asia		

一、參加會議經過

本研討會係由美國知名學術期刊 International Journal of Arts and Sciences 主辦，每年在世界各地舉辦輪流舉辦研討會，今年的舉辦場地在南歐的馬爾他共和國首都瓦雷塔。五天來將近一百位學者與會，主要來自歐洲和中東，亦有少數來自東亞的學者，包含日本、南韓及台灣。會議進行方式分為口頭報告及壁報展示二類。

本人係於2014年12月18日收到論文摘要獲雙向匿名審核通過的信函，獲邀進行口頭報告。乃於2015年2月28日抵達瓦雷塔的 Grand Hotel Excelsior，向主辦單位報到並領取研討會資料袋。本人的報告被安排在3月2日的B2場次，同場報告的有來自美國北卡羅萊納州、捷克、及喬治亞共和國的學者。

二、與會心得

本人以往參與的研討會，均以北美及西歐學者為主。本研討會的與會者中，東歐及中東的學者比例大增，也促進了不同角度的討論。本人的報告結束後，計有來自美國、喬治亞共和國、及伊拉克的學者們發表評論或提出問

題，均對於我國及東亞各國性別平等的實際情形展現了濃厚興趣。尤其是實定法的規範與法律實踐上的差距及行程差距的原因，提供了不少有建設性的想法。

三、發表論文摘要

Abstract

With rising importance and calling for gender mainstreaming as the model of governance, Taiwan, South Korea and Japan have all established their gender equality agencies under the executive branch, which marks the onset of the institutional transformation to pursue the goal of gender equality. By taking a closer look of both the domestic and international feminist advocacy, this article intends to reveal a holistic view of the East Asian gender law reform, policy and institution.

The establishment of gender equality agencies in the central government has been regarded as progressive by many feminists. However, the drawbacks of such practice have also emerged through the time. Against this backdrop, this article would analyze the dedicated gender equality agencies and discuss how gender related bureaucratic mechanism have evolved in the East Asian context. Special focus would be on the formation, features, and limitations of gender equality agencies in the three countries respectively, which would center on the unique situations and challenges on the tension between the bureaucratic system and women's movement. Through reflecting upon the legal reform that has taken place both within and outside of the government, this article advocates for a more cautious attitude toward gender equality agencies and their possible conflicts with the feminist reform agenda.

Key Words: gender mainstreaming, law reform, women's movement, social change, institutionalization

四、建議

主辦研討會對於學術交流與提升均有助益，尤其擴大國際能見度、加強影響力。除了由大學或研究機構自行規劃研討會並邀請講者之外，也可以向本次研討會一樣，由大學與國際知名學術期刊共同舉辦。除了可以藉由該期刊的相關學者名單廣邀學者與會，讓以往少有機會邀請到的學者能與國內學術界接觸；更可以在研討會之後改寫研討會論文，投稿於該期刊，讓作品有

發表的園地。即使不投稿在該期刊，也更可能擔任該期刊的審稿人甚至編輯委員，相信能大幅提升我國學術動能與國際能見度，可謂一舉數得。

五、攜回資料名稱及內容

本次會議攜回研討會論文摘要全集一冊。

科技部補助計畫衍生研發成果推廣資料表

日期:2016/01/27

科技部補助計畫	計畫名稱: 非醫療因素冷凍卵子之法律與生命倫理議題研究 (重點代號: A03)
	計畫主持人: 林昀嫻
	計畫編號: 103-2629-H-007-001- 學門領域: 性別研究
無研發成果推廣資料	

103年度專題研究計畫研究成果彙整表

計畫主持人：林昀嫻		計畫編號：103-2629-H-007-001-				計畫名稱：非醫療因素冷凍卵子之法律與生命倫理議題研究（重點代號：A03）	
成果項目		量化			單位	備註（質化說明： 如數個計畫共同成果、成果列為該期刊之封面故事...等）	
		實際已達成數（被接受或已發表）	預期總達成數（含實際已達成數）	本計畫實際貢獻百分比			
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	2	2	100%	人次	
		博士生	0	0	100%		
博士後研究員		0	0	100%			
專任助理		0	0	100%			
國外	論文著作	期刊論文	1	1	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	2	2	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
博士後研究員		0	0	100%			
專任助理		0	0	100%			
其他成果 （無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。）		無					

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與(閱聽)人數	0	

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

達成目標

未達成目標（請說明，以100字為限）

實驗失敗

因故實驗中斷

其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文： 已發表 未發表之文稿 撰寫中 無

專利： 已獲得 申請中 無

技轉： 已技轉 洽談中 無

其他：（以100字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以500字為限）

本研究探討自主卵子冷凍的相關政策規範，例如各國在法規上的差異性及醫療疏失的責任。卵子冷凍作為女性生育計畫的選項之一，為了賦與女性充分的自主決定，應使其充分知悉有關法律、醫學、社會層面的風險和利益，並健全相關之諮詢內容與程序。本計畫之成果有助於我國規畫人工生殖及衛生政策時，得以作更周全的因應。