**The Brave New World of Intentional Parenthood**

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**Abstract**

The past years have been witnessed to dramatic and rapid technological changes in assisted reproductive technologies (ART), to include mitochondria replacement and artificial gametes, what have challenged our deepest conceptions of what it means to be a parent by fragmenting traditional aspects of parenthood. These two cutting-edge reproductive innovations raise a variety of ethical and legal challenges and dilemmas, *inter alia*, the dilemma of determining the legal parenthood. The article will explore the medical background of these practices and the main dilemma and challenge of determining legal motherhood who is the "real" mother in mitochondria replacement – the nuclear mother or the mitochondrial mother? Likewise, the dilemma in the artificial gametes is how we should define the genetic progenitor who provide the raw material that will eventually produce an artificial sperm and/or egg? is he a genetic parent, similar to any sperm and/or egg providers? Or maybe he is more akin to third party who is totally stranger to the child. After exploring the inadequacy of the existing models to determine legal parenthood in our brave new world, I will offer the intentional parenthood as the best normative model. Normatively, it is an appropriate, just and flexible doctrine for resolving the various modern dilemmas that surface in the context of the different ART, including these two cutting-edge innovations. First, I will elaborate the current applications of it in ART and the suggested implementations of intentional parenthood in mitochondria replacement and artificial gametes. Afterwards, I will offer the practical implementation of it in these two complex and challenging procedures, to include the unique suggestions, on the one hand, of dual maternity and three legal parents and, on the other hand, "semi" parents - a variety of parental statuses. This desired and nuanced usage of intentional parenthood can serve as a role model for any additional futural reproductive practices, since the seeable future in this steadily evolving field is (almost) here.

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Introduction

The past decades have been witnessed to dramatic and rapid technological changes in assisted reproductive technologies (ART) what have challenged our deepest conceptions of what it means to be a parent by fragmenting traditional aspects of parenthood.[[1]](#footnote-1) That has been even accelerated and complicated with the advent of the more recent cutting-edge reproductive innovations, as mitochondria replacement,[[2]](#footnote-2) editing the human genome,[[3]](#footnote-3) cloning,[[4]](#footnote-4) artificial gametes,[[5]](#footnote-5) etc. If we have gotten used already to the notion of genetic mother and gestational mother in the context of surrogacy and egg donation, now we have to add to our lexicon also mitochondrial mother and nuclear mother in the field of mitochondria replacement. Moreover, how we should define the genetic progenitor who provide the raw material that will eventually produce an artificial sperm and/or egg? is he a genetic parent, similar to any sperm and/or egg providers, for all purposes and intents with all the attendant parental obligations and rights? Or maybe he provides nothing, genetically speaking – neither sperm nor egg - similar to any third party that is totally stranger to the child, and consequently cannot claim any parental rights and obligations?[[6]](#footnote-6)

Numerous scholars and articles have been calling for more clear, coherent and comprehensive regulation of the field, especially the tricky and vaxing dilemma of determining the legal parenthood of these brave new world's babies.[[7]](#footnote-7) The acute problem is that if in the "traditional" ART it has become much challenging and troubling, these recent innovations will aggravate this dilemma even worsen. There are plenty of academic articles endorsing using the intentional parenthood as the most appropriate model for resolving these acute dilemmas in the "traditional" ART.[[8]](#footnote-8) Contrarily, as far as I know, except one article entitled *Synthetic Cells, Synthetic Life, and Inheritance* regarding artificial gametes and scant articles concerning mitochondria replacement, there is no even single article dedicated entirely to the implementation of this model in our brave new world. This article will fill in this normative lacuna with coherently developed legal-philosophical foundation. It offers a novel approach in claiming that this normative model, which I define as determining legal parenthood by agreement (hereinafter: DLPBA),[[9]](#footnote-9) is an appropriate, just and flexible normative doctrine for resolving the various modern dilemmas that surface in the context of the different ART, to include the abovementioned cutting-edge innovations.

The article proceeds as follows: I elaborated in the introduction the social and ethical-legal background of both the mitochondria replacement and the artificial gametes. Chapter 1-2 will explore respectively the medical background of these two practices and the main dilemma and challenge of determining legal motherhood who is the "real" mother in mitochondria replacement – the nuclear mother or the mitochondrial mother? Likewise, the dilemma in the artificial gametes is how we should define the genetic progenitor who provide the raw material that will eventually produce an artificial sperm and/or egg? is he a genetic parent, similar to any sperm and/or egg providers? Or maybe he is more akin to third party who is totally stranger to the child.

Chapter 3 will enumerate one by one the inadequacy of the existing models, to include the genetic, the gestational and the best interests of the child (hereinafter: BIC) models, to determine legal parenthood in our brave new world. Chapter 4, the main normative chapter of the article, will offer DLPBA as the best normative model. First, I will elaborate the current "traditional" applications of it in ART and the suggested brand-new implementations of intentional parenthood also in mitochondria replacement and artificial gametes. Afterwards, I will offer the practical implementation of intentional parenthood in these much more complex and challenging procedures. This desired and nuanced usage of DLPBA can serve as a role model for any additional futural reproductive practices, since the seeable future in this steadily evolving field is (almost) here.

1. Mitochondrial Replacement

* 1. The Medical Background

Mitochondria are present in the cytoplasm of the female ovum and are passed on from mother to child. Mitochondria contain their own DNA. Thirty-seven genes are present in the mitochondrial DNA (hereinafter: mtDNA) passed from a woman's ovum into every cell of her progeny. This accounts for less than 0.1 percent of the total DNA present in our bodies.[[10]](#footnote-10) Nevertheless, mtDNA is crucial: without it, mitochondria could not function. A single ovum contains hundreds of thousands of mtDNA molecules that are later distributed randomly into the cells of a developing embryo. Mitochondrial replacement was initially developed for the treatment of infertility in older women, it has also been used to aid women with poor oocyte quality and poor embryonic development, to have genetically related children and then improved for the prevention of mitochondrial diseases. Heritable mutations in mtDNA can cause a variety of disorders in humans, tissues with a high metabolic demand, such as brain, heart, muscle, and central nervous system, are often affected.[[11]](#footnote-11)

Replacement of mtDNA is literally removal of defective maternal DNA and its replacement with healthy DNA donated by another woman. The primary therapeutic advantage lies in the fact that the genetic changes introduced are present in all cells of the fetus, including reproductive cells, thereby eliminating the possibility of transmission of defective genes to all future generations.[[12]](#footnote-12) Total mitochondria replacement results in an embryo's having mtDNA derived entirely from the donor but nuclear DNA derived entirely from the recipient mother and the male whose sperm was used.[[13]](#footnote-13) In the year 2015 it was estimated that only in the United Kingdom there were approximately 2,500 women with the opportunity to have a child, but still pass the mitochondrial disease, whereas in the sequential year, 2016, 1 out of 4,000 children in the United States was born with an inherited mitochondrial disease.[[14]](#footnote-14) Before the advent of this practice, the only available measures to prevent the transmission of mitochondrial disease and/or assist infertile women had been either egg or embryo donations and adoption with their attendant problems and challenges.[[15]](#footnote-15)

There are currently two procedures of this practice: spindle transfer[[16]](#footnote-16) and pronuclear transfer.[[17]](#footnote-17) While in the first the removal of the nucleus occurs prior to fertilization, in the latter this action requires the destruction of the embryo, since it takes place after the fertilization. There used to be another experimental procedure at the late 90's where a healthy mtDNA was injected into eggs with flawed cytoplasm but very fast the Food and Drug Administration ([hereinafter:](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22) FDA) prohibited it.[[18]](#footnote-18) In February 2015 the United Kingdom become the first country in the world to legalize these technologies in the Human Fertilisation and Embryology (Mitochondrial Donation) Regulations.[[19]](#footnote-19) On April 6, 2016 the first healthy birth resulted from this practice was born in Mexico and afterwards several pregnancies took place in the Ukraine.[[20]](#footnote-20) Many scholars and other jurisdictions offer to wait and see what will be the accumulated British experience in order to contemplate what is the best regulation of this sensitive and complicated practice in their countries.[[21]](#footnote-21) Anyway, if the FDA will approve one of this procedures, as the U.K has done, it probably will be spindle transfer due to the forging ethical concerns.[[22]](#footnote-22)

* 1. The Main Dilemmas and Challenges of Determining Legal Motherhood

Mitochondrial Replacement raises a variety of ethical and legal challenges and dilemmas. *Inter alia*, one may find the following as the most vaxing and troubling one: terminology; identity, relationships and parenthood; potential harm; reproductive autonomy; available alternatives; consent; impact on specific interest groups; resources; “slippery slope”; creation, use and destruction of human embryos; and beneficence.[[23]](#footnote-23) For the continuation of our discussion, the main dilemma is whether this practice should be defined as "three legal parent".[[24]](#footnote-24) Traditionally, in any given conception, coitally or using ART, the resulted child has genetic contribution from only two progenitors – one male with his sperm and one female with her egg. But, with the advent of this practice, the female genetic contribution can be provided by two separated women – the one who contribute her nucleus (the nuclear mother) and the one who contribute her mtDNA (the mitochondrial mother).[[25]](#footnote-25)

Saying that, in the legal and ethical literature one of the extensive elaborations is regarding the dilemma of determining the legal motherhood of these two optional mothers. Should we recognize only the nuclear mother as the legal mother of the child since she contributes the overwhelming vast majority of the DNA or since even the mtDNA is meaningful because it is crucial and without it the mitochondria could not function, as was claimed that:

[…] mitochondria, and not only nuclear DNA, are essential for the coordination and regulation of the different life processes: i) the cytoplasm of egg (or zygote) X, where the mitochondria resides, also contains crucial components for regulating and coordinating the various life processes and ii) there are life processes in the cytoplasm of egg (or zygote) X that the nucleus of egg (or zygote) X does not (at least have full) control.[[26]](#footnote-26)

Should we define the mitochondrial mother as the legal mother? If the mtDNA is indeed meaningless, why this whole process is taking place? What should brightly reflect us how it is substantial for preventing these mitochondrial genetic diseases.[[27]](#footnote-27) Put it differently, one may doubt what should be the minimal quantity and quality genetic contribution rendering any individual involved in the process, as the mitochondrial mother in our at hand discussion, to be a legal parent?[[28]](#footnote-28)

Other define this basic but substantial dilemma via the differentiation in the genetic identity[[29]](#footnote-29) between qualitative and numerical identities. Whereas in the qualitative identity two entities share certain properties, things can be qualitatively identical in different degrees, the numerical identity is only held between a thing and itself. The philosophical and bioethical dilemma now is whether the mitochondria donation, given that it involves the genetic manipulation of the germline, affect the characteristics of an existing individual or whether they result in the creation of a new individual? In other words, do it affect the qualitative identity or the numerical identity of the resulting child? This was a bitter debate in the United Kingdom a decade ago, where the Human Fertilisation and Embryology Authority (HFEA) has claimed that it affects only the qualitative identity of the resulting child,[[30]](#footnote-30) while the Working Group of the Nuffield Council on Bioethics (NCOB) has argued that it would create a numerically distinct individual. Since then, most of the scientific writing, as far as I aware of, endorse the contention that it indeed creates a new numerically distinct individual.[[31]](#footnote-31)

In light of the foregoing discussion, should we recognize the mitochondrial mother as the (or more precisely additional) legal mother of the resulted child? If yes, should we differentiate today between the nuclear and the mitochondrial mothers, as some scholars have suggested,[[32]](#footnote-32) as not once we confront the genetic and the gestational mothers?[[33]](#footnote-33) In John Harris' opinion since mitochondria make up the total DNA without conferring any personal features, in order to be a genetic parent, one must provide more genetic material than the total percentage of mtDNA to include conferring personal features. Moreover, what will be the case if one of the genetic parents contributes only 2% of the total nuclear genetic material but it profoundly changes the child's features? Should we adhere to the quantity or quality genetic aspect?

Or maybe actually we have two legal mothers? as we already have in the scenario of egg sharing, where one female uses her egg as the genetic mother and her female spouse uses her womb as the gestational woman.[[34]](#footnote-34) The possibility of dual maternity is well-known in the recent years, although it is mainly discussed regarding lesbian couples,[[35]](#footnote-35) but we can easily import it to our at hand discussion. Finally, one may suggest that the mitochondrial mother should be treated as only "semi" legal mother, something between egg provider and legally stranger who genetically donates nothing. Since, on the one hand, she donates more than the latter, as she donates her mtDNA to the conceived child, but, on the other hand, she absolutely donates much less than the nuclear mother.

2. Artificial Eggs

1. The Medical Background

If we want to avoid the problem of "heteroplasmy,"[[36]](#footnote-36) i.e., the mixing of ooplasm, and specifically mitochondria, from more than one individual, we can use sperm or ova that would contain chemically created, not human, DNA.[[37]](#footnote-37) Artificial egg (oocytes)[[38]](#footnote-38) is a derivative of the more general notion of artificial gamete.[[39]](#footnote-39) This brand new cutting-edge reproductive is very difficult to be comprehensively and coherently defined, but it implied the ability to produce *in vivo*-derived gametes, either starting from immature gametes or obtaining them from alternative sources such as embryonic stem cells.[[40]](#footnote-40) A major requirement of any cell type used to form artificial gametes would be that they can be collected from adult tissue. At the beginning, approximately two decades ago, the source of the stem cell (mainly concerning male sperm) was marrow bone,[[41]](#footnote-41) as well as skin cells.[[42]](#footnote-42)

Currently, research has focused on obtaining them from three main cell types: embryonic stem cells (ESCs),[[43]](#footnote-43) induced pluripotent stem cell (iPSCs)[[44]](#footnote-44) and oogonial stem cell (OSGs) or germline stem cells (GSCs).[[45]](#footnote-45) Recently, the more accepted abbreviation for these technologies is in vitro growth (IVG) hinting that we are dealing with "artificial" eggs, since they have reached their maturity in vitro growth outside the natural woman body.[[46]](#footnote-46) These technologies have yielded already birth of live mouse pups, but in the human reproduction they are still in their infancy and currently they are only futuristic still need to be accomplished with high fidelity and shown to be safe.[[47]](#footnote-47) Nonetheless, as the 2010 Presidential Commission for the Study of Bioethical Issues predicted more than a decade ago – "the pace of discovery is unpredictable."[[48]](#footnote-48) Consequently, the time has arrived also for this bio-medical innovation to be thoroughly elaborated to explore its advantages and disadvantages, to what I should turn now.

1. The Main Dilemmas and Challenges of Determining Legal Parenthood

The promises and advantages of artificial gametes are enormous, as they would alleviate the need for donor eggs obviating the need to overcome intractable female infertility. By the same token, it may overcome the limited availability of embryonic germ cells elements for scientific investigation by sidestepping the ethical and statutory barriers associated with the procurement of human eggs. Likewise, it would provide people who cannot produce mature gametes with the possibility of genetically related children,[[49]](#footnote-49) and even transform the fields of reproductive and regenerative medicine in several ways.[[50]](#footnote-50)

The flip side is that they have also plenty of disadvantages and pitfalls. *Inter alia*, it can open a pandora box of "unisexual/same-sex/solo reproduction", as a live baby can be produced without male sperm and/or female egg.[[51]](#footnote-51) Since, we may omit, to a varying degree, the genetic contribution of one of the genders – in artificial sperm we may abolish the male genetic contribution partially if we still taking a somatic cell from his body and totally if we use only female materials. In artificial egg we do exactly the opposite – deleting, more or less, the traditional necessity of using the female egg while using one of her other somatic cells or even using only the male body. Likewise, when only one gender can produce an entire child, singles and/or same-sex couples can birth to a child genetically related only to one and/or both of them. These breathtaking possibilities rise a variety of dilemmas and challenges - will being genetically related to two parents of the same-sex fundamentally alter the experience of childhood? Will a man whose DNA is contained in the egg be recognized as a biological "mother"? Should the line between fathers and mothers remain distinct? etc.[[52]](#footnote-52)

For the continuation of our discussion, the main dilemma is whether the mere fact that the genetic contribution of one of the genders is totally non existing necessarily means that they cannot be recognized as the legal parents of the resulted child? In addition, similarly to the main dilemma in mitochondria replacement we can inquire again what should be the minimal quantity and quality genetic contribution rendering any individual involved in the process to be a legal parent? Moreover, do fractions of sperm and/or egg are a prerequisite genetic contribution to render the provider as the legal parent of the resultant child?

Or even taking a somatic cell from their body should be equivalent to these reproductive materials as the modern medicine can synthesize it to achieve fertilization and living baby. If the answer to the latter option is yes, should these parents be totally equal to "whole" genetic progenitors as sperm and/or egg providers? Or maybe they should be treated as only "semi" legal parents, something between sperm/egg providers and legally stranger who genetically donate nothing? Since, on the one hand, they are more than third party, as they donate some genetic contribution to the conceived child, but, on the other hand, they are less than sperm and/or םegg providers as they definitely don't contribute the reproductive materials.

3. The Inadequacy of the Existing Models to Determine Legal Parenthood in Our Brave New World

1. The Genetic Model

The most well-known traditional model to determine legal parenthood is the genetic model.[[53]](#footnote-53) Indeed, since the assimilating of the existence and importance of the genetics and the scientific capability to genetically determine the biological parenthood, many societies have based exclusively the legal parenthood on this model.[[54]](#footnote-54) In other words, the two individuals who had contributed the half genetic materials of any given child, should be recognized as his legal parents. Although the genetics receive different wight in any given society and time, and no one will disagree that it is first and foremost cultural-driven,[[55]](#footnote-55) there is no doubts that it is an ancient model, achieving in most of the societies mythological and historical significance in determining both the legal parenthood and motherhood.

In the scientific literature one can find several arguments that reinforce the genetic model as the preferred model for exclusively determine the legal parenthood – the ultimate importance and the far-reaching ramifications of the blood lineage between siblings and especially amongst parents and their biological children; the similarity and continuation elements embedded in bringing your own genetic child to the world; sort of property claim due to the ownership of an individual on his reproductive material - what can be divided into two sub arguments – the ownership *per se* argument besides an intellectual property claim of the parents in their genetic children. Even the BIC may endorse this model since the unique biological parent-child relationships which the genetic proximity yield cause the genetic parents to supply their offspring the best they can give him.

Moreover, there are also some additional "traditional" justifications to prefer the genetic model – the easiness to determine both the genetic fatherhood and motherhood, what one may find as very vague and not dispositive in the other models, as the BIC and the functional parenthood. The genetics should be stable for years and it cannot be easily changed, therefore it is very traceable.[[56]](#footnote-56) It is noteworthy that even its opponents don't deny its inherent high importance and deep meaning, nonetheless according to them it should not be the sole factor in determining legal parenthood. Even they anticipate that although its dramatic erosion and the various ART that challenge him profoundly, it will continue to be one of the most substantial factors in our field, obviously it is not worthless.[[57]](#footnote-57)

Although the foregoing "traditional" writing, the ART, especially the more recent cutting-edge reproductive innovations, as mitochondria replacement, editing the human genome, synthetic biology to include artificial gametes, etc., render the genetic model to be less determinative and clear cut.[[58]](#footnote-58) In the past, half of the genetic contribution of the offspring has come from each of his genetic progenitor, traditionally male and female, therefore both have been recognized as his legal parents - father and mother. But the social openness to a variety of spousal and parental structures coupled with the breathtaking abovementioned reproductive advancements slowly but surely have made the genetics much less decisive factor. In single families as well as in LGBT couples half of the genetic contribution of the missing gender is totally non existing.[[59]](#footnote-59) Likewise, in these various reproductive treatments, the genetic contribution of each of the progenitors may be much less then half and even this contribution can be manipulated and changed.

As was extensively discussed in sub-chapter 1.B. and 2.B., what should be the minimal quantity and quality genetic contribution rendering any individual involved in the process to be a legal parent? do fractions of sperm and/or egg are a prerequisite genetic contribution to render the provider as the legal parent of the resultant child? There is no doubt that these two typical cases of our brave new world brightly illuminate us that the narrow and the "traditional" understanding of the genetic model as coherent and comprehensive tool to determining legal parenthood is illusive as it is apparently insufficient and inadequate.

1. The Gestational Model

Since in most of the brave new world scenarios, as mitochondria replacement, cloning and the various usages of artificial gametes, there is still clear need in using a human womb, I should explore, even briefly, the gestational model. Similar to the genetic model, this model is also a traditional one, since during the whole humankind history determining legal motherhood hadn't been too difficult. To every delivery there was, besides the giving birth woman, at least one additional witness and very easily one can confidently assume that this woman should be the legal mother of the resulted child for all purposes and intents with all the attendant parental obligations and rights.[[60]](#footnote-60) This axiom was so strong that legislators and courts have assumed that the woman who gives birth is obviously always the mother of the conceived child in all the aspects of motherhood, and that there was no need for this axiom to be anchored either in legislation or in a judicial decree. However, the first test tube baby and the advent of egg donations and surrogacy unraveled this Gordian knot into its three basic components and totally blurred this simple working premise – the genetic contribution, the gestational contribution, and the functional contribution.[[61]](#footnote-61)

The main justifications to recognize the gestational woman as the legal mother are:[[62]](#footnote-62) First and foremost, we should reject the genetic model as being patriarchal which enshrines genetics as superior since this is the ultimate and sole biological male contribution and it degrades the unique women abilities of pregnancy and delivery.[[63]](#footnote-63) The constant biological investment[[64]](#footnote-64) the pregnant woman supplies the fetus in her womb for giving him the best for his healthy development, what influences him enormously;[[65]](#footnote-65) the 9 months around the clock physiological investment she provides, besides the pains, sacrifice and suffering, for bringing the child to the world;[[66]](#footnote-66) this woman has a sort of a "property" claim in the resulted child due to the far-reaching influence she has on the born child before, during and even after his pregnancy and delivery. Consequently, there is also a significant moral claim for being his legal mother.[[67]](#footnote-67) Finally, one can find recently in the scientific literature the notion of epigenetics which means that there is even a genetic influence of the gestational mother on her fetus.[[68]](#footnote-68) It is not means that there is an inherent change in the DNA itself, but still there are substantial ramifications on health and physiology of the resulted child and even of his offsprings.

The main problem with this model is that, by definition, it is underinclusive since it deals only with maternal and not also with paternal parentage. But, even in dilemmas of determining legal motherhood, one may cast doubt whether judicially preferring the birthing woman is solely due to the gestational motherhood or is has been traditionally the clear-cut indication for being the genetic mother. Put it differently, the gestational element is not the exclusive factor for the legal motherhood, but it is only an indication for the existence of the genetics, that should be the superior factor.[[69]](#footnote-69) There are several cases where American courts prefer the genetic over the gestational mother, as the seminal case of Johnson v. Calvert, where the genetic and intending mother was superior to the surrogate and gestational mother.[[70]](#footnote-70) Moreover, in any case where no human womb is involved, like the scenarios of artificial womb/ectogenesis,[[71]](#footnote-71) this model is again irrelevant, what render the genetic model to be much more comprehensive and useful.

1. The Best Interests of the Child Model

One of the much "modern" models to determining legal parenthood is the BIC. Modern in terms that it is not traditional and ancient as the genetic and gestational models. If in the past, the child was treated socially and legally as an object that belongs to his or her parents, the modern shift in the legal status of children is clearly reflected in this main doctrine. It is much older than the notion of Child’s Rights and has long served as the ultimate factor in any process of making decisions or conducting any legal actions regarding children. It is embedded explicitly in various jurisdictions, both in local legislation[[72]](#footnote-72) and in the judiciary system, as well as in international conventions. Likewise, over time, but especially since the end of the twentieth century with the strengthening of the human rights discourse, the BIC doctrine has also been invigorated.

It is noteworthy that this model has been bitterly criticized, but nonetheless the accepted contention still emphasizes the centrality of the child in any given family and the ultimate importance of his best interests and rights. It brightly reflected, for example, in the writing of Martha A. Fineman who has called to abandon the patriarchal spousal structure of the family in expense of the vertical parent (and more precisely mother)-child relationship. Likewise, Barbara Woodhouse has argued for renewing this model with Child-Centered Approach (Model).[[73]](#footnote-73) In the recent decades there is abundance of academic and judiciary writings concerning the desired practical implementation of this model in any dilemma of determining the legal parenthood before and after the delivery of the child. Anyway, numerous scholars and rulings have endorsed the usage of this model even in this regard even before the child was born, as Steven N. Peskind wrote that with all its pitfalls, there is no better model.[[74]](#footnote-74)

The pitfalls of this model are plenty: First and foremost, it was argued that it is too amorphous and undefinable[[75]](#footnote-75) for the most and manipulative for the least,[[76]](#footnote-76) since it depends too heavily on the individual self-point of view of the scholar and/or the judge and the agenda he tries to promote. Secondly, in determining legal parenthood almost every model suggested academically claims that only it promotes the BIC.[[77]](#footnote-77) Thirdly, some scholars even have defined it as not least than notorious, due to the infrastructure it bases for gender stereotypes; others treat it as unreasonable state penetration to the intimate family realm while using paternalistic insights; some research claim that forcing parenthood on unwilling individual, presumably in the name of the BIC, only profoundly damage and not enhance the child.[[78]](#footnote-78) Fourthly, this model is being applied on a case-by case basis, what, by definition, cannot be consistent, predictable and coherent. In addition, it necessitates extensive evidentiary process, while analyzing the facts at the time the dispute arises and not at the time the child was conceived, thus, it cannot be precise, what encouraging litigation.[[79]](#footnote-79)

Besides the forgoing "traditional" drawbacks of this model, the dilemma whether and how to implement the BIC in the general regulation and more specifically in determining of the legal parenthood in our brave new world is one the most sophisticated questions. I. Glenn Cohen had claimed that BIC cannot be a reliable justification to regulate narrowly ART and in his own words – "I hope that never again will policymakers, courts, and legislatures defend the regulation of reproduction on grounds of children's best interest or child welfare […]".[[80]](#footnote-80) Others recently argued that only taking it into consideration will reduce the unruly usage of mitochondria replacement to medical justified cases, otherwise there are acute concerns that the resultant child's interests will be severely damaged –

By adopting the best interest of the child approach, MRT may be narrowly tailored to only address a situation when a future child is at risk for mitochondrial diseases. By applying the best interest of the child approach, there will be full consideration of MRTs long-term effects on health, identity, and family structure of the conceived child.[[81]](#footnote-81)

This contention was implied in the general cases of genome editing while calling to include in any future regulation the specific goal of developing precise risk versus benefit guidelines with a focus on the BIC of any child born in association with genome editing.[[82]](#footnote-82) Anyway, I explored in a nutshell the general difficulties in using BIC as a comprehensive and coherent model for determining the legal parenthood not only in our brave new world. In the latter context it is still amorphous and not determinative even for the proper desired regulation of ART.

4. Intentional Parenthood as the Best Normative Model in Our Brave New World

* 1. General

This "modern" model is not an entirely new academic and judicial innovation, since it was first and extensively discussed already in 1990 by Marjorie M. Shultz in her seminal article: *Reproductive Technology and the Intent-Based Parenthood: An Opportunity for Gender Neutrality*.[[83]](#footnote-83) Since then DLPBA has been endorsed by numerous legal and sociological scholars. In 2015 it was even claimed that:

Since Johnson, over 20% of disputed ART parentage cases have applied the intent test, and over 74% of disputed ART parentage cases have awarded parentage to the intended parents, regardless of which test the court used to determine parentage. In addition, since Professor Shultz published her article, every model parentage act that has been drafted in the United States has incorporated the intent test to determine legal parentage for children conceived via ART.[[84]](#footnote-84)

Although I have not conducted any comprehensive empirical research to establish whether these amazing and challenging figures are accurate or maybe just an exaggeration, it seems that only in the recent decades the centrality, feasibility and efficacy of this unique model have been grasped by legislators, judges, scholars and even laymen[[85]](#footnote-85) as making it best suited to determining legal parentage in the modern era. As was convincingly argued by Douglas NeJaime,[[86]](#footnote-86) DLPBA (like functional parenthood) has enormously enabled the marriage equality revolution, as was decided in June 2015 by the American Supreme Court in *Obergefell v. Hodges*.[[87]](#footnote-87) The other side of the coin is that this recent marriage equality may enormously promote the usefulness and richness of DLPBA (as well as functional parenthood)[[88]](#footnote-88) in all kinds of familial structures, as he concluded in his article:

It specifically shows how marriage equality can facilitate the expansion of intentional and functional parentage principles across family law -- not only inside but also outside marriage, for both same-sex and different-sex couples […] Marriage equality may push state family law regimes to accommodate same-sex family formation in ways that yield greater recognition of intentional and functional parentage in all families.[[89]](#footnote-89)

To summarize this sub-chapter, as the past three and a half decades have rightly taught us DLPBA may enormously assist us in achieving equality between different-sex and same-sex couples, as well as between biological and non-biological parents, either married or unmarried, as this model has deep meaning and far-reaching efficacy.

* 1. Current Applications of Intentional Parenthood in ART

DLPBA has another crucial task for achieving equality even between children born coitally and following ART.[[90]](#footnote-90) That is much true, since prior to the use of ART, the parental paradigms contended with two basic scenarios. The first was where two heterosexual parents produced a child the “old fashioned way.” The parents had a legal claim to the resultant child based on genetics, gestation, intent, and the marital presumption. The second scenario was traditional adoption, a method of acquiring parental rights that is driven entirely by the post-conception intent of the parties and in which presumptive, gestational, and genetic links are expressly overridden. These two longstanding and well-established categories represent the traditional baseline for determining legal parenthood.

But ART such as ova donation, sperm donation, and surrogacy, typically involving between three and four parties, present a more complicated landscape because they fragment the roles of the presumptive, genetic, gestational, and intentional parents. For instance, in a surrogacy arrangement between a same-sex male couple and a female gestational mother, the latter would have a gestational claim to the child, the egg donor (who is not necessarily the gestational mother), would have a genetic claim to the child, the male genetic contributor would have a genetic and intentional claim to the child, the putative (adoptive) father would have an intentional claim to the child, and the gestational mother’s husband might have a presumptive claim to the child. As a result, ART implicate varying and often conflicting sources of legal parenthood claims and have produced opposing legal approaches.

For instance, courts in California have repeatedly used DLPBA to validate surrogacy agreements while courts in New Jersey have expressly declined to do so. In the seminal case of *Matter of Baby M*, the Supreme Court of New Jersey invalidated a surrogacy agreement in which a woman contracted to gestate a child for a natural father and his wife, who would have legal rights over the child, on the ground that it was against public policy, even where the gestational mother did not share a genetic link to the child.[[91]](#footnote-91) While this case was purportedly based partially on public policy concerns about the potential harms of surrogacy, the fact that gestation was sufficient to create a default claim of motherhood on the part of the gestational mother, even though the woman had no genetic link to the child, demonstrated the court’s adherence to biological notions of parenthood.[[92]](#footnote-92) By contrast, in 1993, a California court, applying DLPBA upheld a surrogacy agreement between a heterosexual couple and a surrogate, stating:

We conclude that although the Act recognizes both genetic consanguinity and giving birth as means of establishing a mother and child relationship, when the two means do not coincide in one woman, she who intended to procreate the child—that is, she who intended to bring about the birth of a child that she intended to raise as her own—is the natural mother under California law.[[93]](#footnote-93)

Subsequent cases have further reinforced DLPBA by applying it to instances where the intended parents have no genetic connection to the child at all.[[94]](#footnote-94) As evidenced by the approach taken in New Jersey, unlike adoption, where the parental rights to a child who has already been conceived are transferred by the courts from one party to another, the pre-conception, intent-based approach continues to be controversial and has been met with resistance by certain courts. In part, this is because the intent-based approach transfers the source of parental designation from the auspices of biology, either genetic or gestational, and the traditional marital presumption to the realm of freedom of contract and market principles. Nevertheless, DLPBA has been increasingly advocated in academic literature as the appropriate way to determine parentage in the context of ART. One reason for this trend is that contract law is necessary in the context of traditional ART in order to allow an intentional parent to override the rights of a genetic, gestational, or presumptive third party, thereby furthering various normative benefits such as familial stability and legal certainty. Moreover, in the absence of contract principles, the expectations and intentions of the parties are thrown to the wayside in favor of formalistic, rigid, state-imposed parental designations.

Indeed, various scholars, such as Dara E. Purvis,[[95]](#footnote-95) Martha M. Ertman[[96]](#footnote-96) and Melanie B. Jacobs,[[97]](#footnote-97) have dedicated their research to promoting the implications of DLPBA in the various dilemmas of determining the legal parentage of a child conceived using one of the "new" ART. Contrarily, there are many calls claiming that the legal parentage of those ART children should be established in the same way as that of children conceived in traditional fashion.[[98]](#footnote-98) Consequently, Yehezkel margalit has dedicated some of his writings to exploring, *inter alia*, that the time has come to use this model uniformly as the preferred doctrine even in the context of the “old fashioned way” of naturally conceiving children.[[99]](#footnote-99) A normative model that relies on the agreement and intent of the parties in all instances protects against the tendency of society to promote the validity and legitimacy of certain children over others. In this way, DLPBA is a potent weapon against discrimination. As he concluded -

Therefore, DLPBA could be the framework for determining parentage in all cases, irrespective of whether the parties engaged in sexual intercourse. Relying on this contractual method would, in many ways, be in the BIC because it ensures that a child has parents that actually want the child and have contemplated the responsibilities of having a child.[[100]](#footnote-100)

This latter academic call, fortunately, has been fruitful, as in fact, Quebec's legal system has generated a precedent-setting piece of legislation. This Canadian provincial law permits the parties to sign an agreement known as the "parental project."[[101]](#footnote-101) It allows the exemption of the male from parental obligations on the basis of agreement, even if the child was born of sexual relations.[[102]](#footnote-102) However, if he wants to be recognized as the father, he may lay his claim in the first year of the child's life. It reads:

If the genetic material is provided by way of sexual intercourse, a bond of filiation may be established, in the year following the birth, between the contributor and the child. During that period, the spouse of the woman who gave birth to the child may not invoke possession of status consistent with the act of birth in order to oppose the application for establishment of the filiation.[[103]](#footnote-103)

In another Canadian province, Ontario, in 2016 was enacted the All Families Are Equal Act,[[104]](#footnote-104) articulating that a man and woman can have conjugal relations and nonetheless the man will be legally treated as a sperm donor. The only necessitate prerequisite is that the initial written agreement regarding his exemption was agreed upon prior conceiving the child.[[105]](#footnote-105) As the definitions article, article 1(1), defines sperm donation not only via ART – "“insemination by a sperm donor” means an attempt to conceive a child through sexual intercourse in the circumstances described in subsection 7(4)" and the relevant article, 7(4), states as the follows -

This section is deemed not to apply to a person whose sperm is used to conceive a child through sexual intercourse if, before the child is conceived, the person and the intended birth parent agree in writing that the person does not intend to be a parent of the child.[[106]](#footnote-106)

Later, it was enacted in sub-article 7(5) that this person shall not be recognized in law to be a parent of that child, as anonymous sperm donor. Similarly, in Australia there is an option that known sperm donor may be treated as anonymous donor even if the child has been conceived via sexual intercourse, due to their initial written agreement. Thus, in two central Canadian provinces as well as in Australia our normative suggestion was explicitly applied in the recent legislations.[[107]](#footnote-107) Summarizing up this sub-chapter, there are significant benefits to using a monolithic and unified mechanism to establish the legal parentage of all children without regard to the method bringing them to the world, naturally or not. Likewise, sexual inclination, marital status and gender identity, etc. of their parents should not matter.[[108]](#footnote-108) In my perspective, DLPBA is the best model to achieve this ultimate goal, as was recently claimed that –

Thus, it is time for the Court to return to the subject of constitutional parenthood and provide a more contemporary definition-one that, at a minimum, both recognizes and protects the rights of intentional parents. Only by doing so will the Court adequately safeguard the constitutional rights of the ever-evolving American family.[[109]](#footnote-109)

* 1. The Suggested Implementations of Intentional Parenthood

The general "Art of Regulating ART",[[110]](#footnote-110) to include the dilemma of how to determine the legal parenthood of the individuals involved in it, is complicated and difficult.[[111]](#footnote-111) That is much true concerning any new cutting-edge reproductive innovations, as mitochondria replacement and/or artificial eggs, what not once surface new ethical and legal dilemmas, as was extensively explored in sub-chapters 1.b., 2.b.. As mentioned previously in the article, there is a well-known contention in the scientific literature that DLPBA is an appropriate, just and flexible normative doctrine for resolving the various modern dilemmas that surface in the context of the different ART, as well as for children who were born “the old-fashioned way.”[[112]](#footnote-112)

I will elaborate in this sub-chapter, the main innovative normative portion of my article, how DLPBA could serve also as a much flexible and efficient method to achieve elasticity, certainty, and social and economic justice, while indicating to the legal system what the most appropriate private regulation should be. Accepting this normative model may improve the coherency and flexibility of determining legal parentage in all aspects of ART, even in these futural reproductive procedures. Therefore, I want to warmly join the following conclusions regarding respectively mitochondrial replacement and artificial eggs -

Concluding that the intent test is the proper method for resolving parentage disputes in MRT contexts has significant consequences. First, it recognizes that the intent test is flexible and adaptable to changing circumstances, a crucial feature of modern doctrine in an era where technology changes at increasingly rapid speeds. States should consider this flexibility when adopting laws that address ARTs because new ARTs are sure to be developed as fast as or faster than states can pass new laws.

If a human genome has been strongly modified through gene editing, or even artificially synthesized […] In such cases, legal or intentional parenthood will be not just an alternative option to be compared with genetic parenthood, but the only possible kind of available parenthood.[[113]](#footnote-113)

As regarding mitochondria replacement, as the discussion in sub-chapter 1.b. brightly reflect us, the genetic model is very amorphous and vague in determining the legal motherhood of the mitochondrial mother over/or in addition to the legal motherhood of the nuclear mother. The ethical and legal conundrum what should be the minimal quantity and quality genetic contribution rendering any woman involved in the process to be a legal mother is dead-end endless philosophical and bio-ethical discussions. Adhering blindly to the genetic contribution as the exclusive factor in determining the legal motherhood without paying any intention to its quantity and quality doesn’t make any sense. Therefore, we should reject beforehand the following firm and overinclusive statement –

[…] this Article sets forth the conceptual starting point that frames the legal definition of parentage, namely, that the law must recognize as parent any individual (regardless of gender, sexual orientation, or marital status) who is biologically related to a child.

Instead of squarely falling into the slippery slope of the "genetic essentialism",[[114]](#footnote-114) a priory, we should differentiate between the two genetic mothers – the mitochondrial mother and the nuclear mother, since there is no doubt that their genetic contributions is definitely not equal. Due to the massive and meaningful contribution of the latter she has the superior stance to become the legal mother of the resultant child, what cannot be said on the first one, due to her scant quantity and quality genetic contribution. Consequently, I prefer to join the following starting point –

This Note argues that the legal community should adopt a strict rule-similar to the approach taken in organ donation […] the individual donating mitochondrial DNA to the resulting child should have no parental rights. The application of this default rule should supersede any other determination of legal parentage made through the application of other approaches.[[115]](#footnote-115)

As for myself, I agree that the default should be that only substantial genetic contribution, as the portion of the nuclear mother, can be a reliable basis for being "putative" parent that can be finally determined as the legal parent of the child. That exactly was my conclusion regarding the legal paternity -

Therefore, the starting point for determining legal fatherhood should be genetic affiliation, i.e., every man who impregnates a woman should be determined as the legal father of the resultant child. However, legal paternity in the context of AID [artificial insemination of donor] should be determined according to the initial agreement between the parties.[[116]](#footnote-116)

But, with all the respect, I cannot agree with the bottom line (double meaning) of the previous quotation arguing that – "[…] this default rule should supersede any other determination of legal parentage […]". If one of two "putative" mothers will serve also as the gestational mother, either she is the mitochondrial mother or the nuclear mother, it may enormously assist her claim to be the legal mother as she is both the gestational and the genetic, to a varying degree, mothers. What means that, even biologically, genetically and gestationally, this default should not be the finishing point. Anyway, both gestational and intentional motherhood supersede the genetic model, especially if both of the biological models overlapping. Moreover, according to my normative model if the mitochondrial mother will opt in to become the legal mother or the nuclear mother will opt out, we should respect their initial written agreement. Only DLPBA may enormously assist us in distinguishing amongst the "putative" parents between intentional parent and genetic donor, while we should recognize the first as the legal parent of the conceived child, we should not do the same with the latter. This general working premise is much true in our dilemma. As was rightly concluded that -

If the mitochondrial donor is a true donor, courts should dismiss her claim for legal parentage rights; if she is an intentional lender of procreative genetic material, she should be recognized as a legal parent.[[117]](#footnote-117)

The best litmus paper to distinguish between the two "putative" mothers, the mitochondrial mother and the nuclear mother, who should be recognized as the legal mother of the conceived child is DLPBA. It may dictate us that none of them should be recognized as such, since the initial agreement was that the two of them will be only genetic, mitochondrial and nuclear, donors; it can support the default rule - that the nuclear mother should be the sole legal mother - since she contributes the substantial quantity and quality genetic contribution, the DNA; it can supersede this genetic contribution rendering the mitochondrial mother as the legal mother and the nuclear mother as only genetic donor.

Alternatively, we can continue recognizing the nuclear mother as the legal mother, but besides her the mitochondrial mother should be treated as additional "semi" legal mother, as will be extensively elaborated in the next sub-chapter. Finally, and much innovatively, it can recognize both as the legal mothers for all purposes and intents,[[118]](#footnote-118) and if the identity of the sperm provider is known and he is the legal father, we have actually three legal parents, as will be extensively discussed in sub-chapter 4.d.. Therefore, I disagree also with the following statement, rejecting beforehand the applicability of DLPBA in our at hand scenario –

However, each of these approaches, including the intent test, should not be applied to parentage disputes involving MRT because the process and nature of MRT reveals similarities to organ donation that render traditional ART approaches inapplicable.[[119]](#footnote-119)

As for concerning artificial gametes, first and foremost, we should warmly welcome these technologies, since not infrequently they serve as the only available therapeutic means for infertile couples as well as the only method for LGBT couples to become not only a legal but also genetic parent(s). As was rightly concluded –

Artificially generated gamete progenitors from non-embryonic cells that are re-introduced via homologous transplantation would both possess the characteristics of natural gametes and provide a truly therapeutic treatment for infertile people that would be seen as acceptable for people from a wide variety of backgrounds.[[120]](#footnote-120)

Contrarily, we should make our best efforts to avoid any misuse of such artificial gametes to prevent the problematic possibility of "unwitting parenthood", that was defined as – "[…] that of taking a person's cells, converting them to AGs [artificial gametes] and using them in reproduction—without that person's knowledge or consent".[[121]](#footnote-121) What may even be considered "coerced parenthood", as using the gametes of a couple against the will of one of them,[[122]](#footnote-122) sperm "theft", paternity fraud[[123]](#footnote-123) etc. Therefore, as will be extensively elaborated in sub-chapter 4.d., any ART, to include mitochondria replacement and artificial gametes, should not be launched without a written agreement as a mandatory prerequisite. In this explicit agreement any of the individuals involved in these procreative procedures will wittingly articulate what should be done with his genetic material. Any other use of it is totally prohibited and any resulted child from this misuse should not be defined as the legal child of this genetic progenitor.

The identical result - granting non-parenthood status to a person who did not intend to be a parent - can be found in section 707 of the previous version of the UPA and currently, after the year 2017, in section 708, which provided that a person will not become a parent absent his or her express agreement. Section 707 was undoubtedly one of the major innovations of the former version of the UPA. It stated that as long as the party did not expressly agree to become a parent after his death, no use should be made of his or her genetic material.[[124]](#footnote-124) If someone uses the party's genetic material in contradiction of these rules and a child is born, the deceased will be considered a non-parent with no parental status. According to the previous version of the UPA -

If an individual who consented in a record to be a parent by assisted reproduction dies before placement of eggs, sperm, or embryos, the deceased individual is not a parent of the resulting child unless the deceased spouse consented in a record that if assisted reproduction were to occur after death, the deceased individual would be a parent of the child.[[125]](#footnote-125)

It is noteworthy that my foregoing conclusion possible only if we accept DLPBA as the preferred normative model, otherwise we should cling to the genetic model and also recognize this genetic progenitor as the legal parent of the resultant child. This is my answer to the following statement – "As we move toward the possibility of synthetic gametes, the debate over genetic and biological parents versus intended parents will demand resolution".[[126]](#footnote-126) Consequently, if any ART will be accompanied with mandatory written agreement, there should not be any difference if the artificial gametes involve also surrogacy arrangement, what should also be regulated by the initial agreement of all the parties. Therefore, I disagree with the following concern -

To what extent should the law respect contractual agreements or other indicia of intent, as it has been called to do by some courts considering surrogacy arrangements? The situation becomes still more complex if other reproductive technologies, such as surrogacy, are combined with IVG.[[127]](#footnote-127)

Indeed, there are academic calls to regulate also artificial gametes via DLPBA articulating the initial intents of the various individuals involved in the reproductive treatment in agreement. What in my opinion should be in written and a mandatory prerequisite to any ART procedures. I want to warmly join the following, as far as it concerns the intentional parenthood:

If a human genome has been strongly modified through gene editing, or even artificially synthesized […] In such cases, legal or intentional parenthood will be not just an alternative option to be compared with genetic parenthood, but the only possible kind of available parenthood.[[128]](#footnote-128)

To be more precise, in any case of artificial sperm and the egg of the gestational mother, the default should be recognizing the latter as the legal mother of the conceived child, since she is the "whole" biological mother, to include the genetic and the gestational mothers. Who should be defined as the legal father?[[129]](#footnote-129) Can the artificial sperm render his progenitor as the legal father? If this case will be accompanied with donated egg, will the legal outcome be different? To be on the safe side and/or to dodge this thumb rule and the dilemma concerning the legal paternity and/or the maternity, the individuals involve in this procedure should, as mandatory prerequisite, agree in advance, *inter alia*, on these crucial questions. To include the much innovative possibility of agreeing that these "genetic" parents will be only "semi" legal parents. Since, on the one hand, they donate something, genetically speaking, to the resultant child, but, on the other hand, they absolutely donate much less than the reproductive material.

That is the best normative model also for determining the legal parenthood in cases involving human sperm and artificial egg where the "genetic" mother is not the gestational mother. A priory, the latter, who is gestational/"whole" biological mother, trump the first, whom is definitely not a "whole" genetic mother, since she had donated only the raw material that produced the artificial egg. But DLPBA can change this initial presumption due to a contrary agreement between the individuals involved in this procedure. Such agreement can, on the one hand, recognize the "genetic" mother as the legal mother of the resultant child with all the consequent parental obligations and rights. Since the intentional mother overlap with the "genetic" mother, nonetheless it is only to a varying degree. On the other hand, this agreement can opt out the gestational mother from the legal motherhood as it is possible in all the other scenarios of DLPBA. Furthermore, in our case the legal motherhood is not given to a (genetic) stranger, but to the "genetic" mother.[[130]](#footnote-130)

That is also the conclusion if in the last scenario a donated artificial egg and a surrogate mother will be involved, what is splitting even worsen the legal motherhood between three possible women – the "genetic" mother, the gestational mother and the intentional mother. My normative model will determine the intentional mother as the legal mother of the conceived child, due to the initial agreement of the parties involved, although she is neither the gestational mother nor the "genetic" mother.[[131]](#footnote-131) This is exactly the efficacy and applicability of DLPBA, which may determine a woman as the legal mother of a given child while not recognizing as such a woman who is both the gestational and the genetic mothers. Saying that, in our at hand case, where these two components of the motherhood is fragmented between three women, the superiority of the intentional mother is even much more justified.[[132]](#footnote-132)

DLPBA is crucially needed also in case of two artificial gametes – sperm and egg, especially if it involves surrogacy arrangement. Since none of the "genetic" parents are "whole" parent genetically speaking, since they provide only the raw material of the final gamete, none of them can claim the legal parenthood based solely on the genetic model. Similarly, the surrogate mother in most of the cases blocked from claiming the legal motherhood, since she is only the surrogate and not the "real" mother. According to the typical agreement between the three individuals, the "genetic" parents should be recognized as the legal parents of the conceived child, since besides being the intentional parents they are also the "genetic" parents, to a varying degree. This agreement also substantially endorses the inevitable conclusion that the legal mother should be the "genetic" mother and not the surrogate mother. Since according to their agreement, just after the delivery, she must opt out the legal motherhood in expense of the intending and the "genetic" mother.

* 1. The Desired and Nuanced Practical Implementation of Intentional Parenthood

One of the main pitfalls of DLPBA discussed in the scientific literature is being too vague, amorphous, and consequently untraceable. Moreover, even if the initial agreement was clear, it is still may vary during the time of the performance of the contract. Since any ART takes for the least nine months and for the last years, one of the parties to it may change his mind during the lapsing of time.[[133]](#footnote-133) That is even much problematic when more than two individuals are involved in any mitochondrial replacement and/or artificial egg are used, what may worsen the chances of change of heart. Therefore, the first required practical aspects of the desired and nuanced practical implementation of DLPBA is the need for a written agreement.

**The Need for a Written Agreement**[[134]](#footnote-134)

The main road to avoiding any of the foregoing procedural and contractual problems is to consolidate the need for a written agreement as a mandatory prerequisite.[[135]](#footnote-135) Thus, parties seeking to anchor their intentions in the context of DLPBA should be required to enter into a written agreement. A written contract is particularly important in determining whether certain individuals intend to serve as full parents, "semi" parents or only a genetic donor because the intentions of the different parties may not be clear.[[136]](#footnote-136) Additionally, without a written contract, the likelihood of post conception or post-birth disagreement and litigation increases. Therefore, I would warmly embrace the following statement –

However, this is a foreseeable problem, and ART provides a clear opportunity for unambiguous expressions of intent, for example, with a written contract before a conflict ever arises.[[137]](#footnote-137)

Two of the central Uniform Acts, the Uniform Probate Code (UPC)[[138]](#footnote-138) and the Uniform Parentage Act (UPA),[[139]](#footnote-139) accept as equivalent to a written agreement any case where "[…] the intent is proved by clear and convincing evidence". See respectively SECTION 2-705(d) of the UPC and SECTION 704 of the UPA –

(2) the parent intended to perform functions under paragraph (1) but was prevented from doing so by death or another reason, if the intent is proved by clear and convincing evidence.[[140]](#footnote-140)

(b) Failure to consent in a record as required by subsection (a), before, on, or after birth of the child, does not preclude the court from finding consent to parentage if: (1) the woman or the individual proves by clear-and-convincing evidence the existence of an express agreement entered into before conception that the individual and the woman intended they both would be parents of the child;[[141]](#footnote-141)

Nevertheless, since we are dealing with two of the most recent cutting-edge reproductive innovations, a priory we should insist on only a written agreement as a mandatory prerequisite and definitely not anything else. This is the only way to make it less likely that in the future one of them will claim a change of heart.[[142]](#footnote-142) The authority to change the initial written agreement will be given only upon later mutual agreement of the parties to rescind their previous written contract. Alternatively, the court may rewrite the contract and/or adjust it only under special circumstances,[[143]](#footnote-143) such as severe economic or emotional harm to the BIC. Even following such judicial adjustment, however, these parties will not necessarily be awarded full legal parentage of the conceived child.[[144]](#footnote-144)

**Dual Maternity and Three Legal Parents**

In the comparative law, inside[[145]](#footnote-145) and outside[[146]](#footnote-146) the states of the U.S., we have already some precedents of dual/co-maternity,[[147]](#footnote-147) most of them are recognizing both of lesbian spouses as the legal mothers of the child they conceived and rise mutually. Besides the cases of egg sharing, where one female uses her egg as the genetic mother and her female spouse uses her womb as the gestational woman,[[148]](#footnote-148) in all the other cases the second partner provides, biologically speaking, nothing – neither the egg nor the womb.[[149]](#footnote-149) Nonetheless, the law still recognizes her as the second legal mother of the conceived child via second parent adoption[[150]](#footnote-150) or by the British legislative parental order[[151]](#footnote-151) or more recently the Israeli judicial parental order.[[152]](#footnote-152)

Given that this dual recognition has become more and more prevailing, I am confident that this dual motherhood is much reasonable in the mitochondria replacement context, where both of the mothers provide genetic contribution. Whereas the nuclear mother contributes the vast majority of the DNA both in quantity and quality, indeed the mitochondrial mother contributes only the mtDNA. All by all, a priory both can be defined as the genetic mother, to a varying degree. If that is not enough, as was extensively elaborated in the previous sub-chapter, DLPBA may enormously support this dual recognition following the initial agreement of these two spouses to act in co-maternity.

In the foregoing scenarios, if the identity of the sperm provider is known and he was involved in this procedure, we may result with three legal parents. If in the past such trio recognition has been used to be treated as – "acute challenge to the traditional familial structure",[[153]](#footnote-153) slowly but surely even this recognition has been more and more accepted.[[154]](#footnote-154) Thus, two legal fathers and one legal mother[[155]](#footnote-155) are the less common parental structure as opposed to the opposite – two legal mothers and one legal father which is more prevailing.[[156]](#footnote-156) Recently, there are several additional precedents recognizing three legal parents, nonetheless they weren’t married to each other, as they live in polyamorous families.[[157]](#footnote-157)

In our discussion, all the three individuals are genetic contributors, to a varying degree - as the male is "whole" genetic father whereas the two "putative" mothers divide between them the "whole" genetic contribution – the mitochondrial mother and the nuclear mother. Consequently, the genetic model may recognize all of them as the three legal parents of the resultant child. To dodge the inevitable dilemma of what should be the minimal quantity and quality genetic contribution rendering the "putative" mothers to be the legal mother, this reasonable conclusion may be easily supported by DLPBA, if the initial agreement between all the three indeed was to be three legal parents. If the recognition of "whole" three legal parents is still difficult to be grasped, in the reminder of this sub-chapter I want to suggest much less innovate conclusion.

**"Semi" Parents - A Variety of Parental Statuses**

As was extensively elaborated elsewhere, in my opinion, legal parenthood should be awarded to any individual who wills, intends and desires to become the legal parent of a given child. If he intended to become a legal parent to all intents and purposes, he will be assigned full parental status. If he isn’t interested in becoming a full legal parent, he will acquire partial parental status. The exact determination of the scope of legal parental status, including its derivative parental obligations and rights, will be privately agreed upon between the parties to this procreation arrangement.[[158]](#footnote-158)

This perspective can already be found in the unbundling of parental status and the consequent obligations and entitlements, following the divorce of the legal parents, in approximation to their previous fulfillment of their parental obligations. This challenging suggestion was proposed by Elizabeth S. Scott as the most suitable substitute for the tender years doctrine and/or the BIC. This approximation rule[[159]](#footnote-159) should guide the court in resolving the bitter and endless disagreements over the most appropriate sort of custody in any given incident. This suggestion was adopted by the American Law Institute (ALI).[[160]](#footnote-160) Another clear differentiation of a variety of parental statuses upon the dissolution of the family, from which parental entitlements of varying scope derive, can be found in the ALI. In that suggestion there are two additional "semi" parental statuses – parents by estoppel,[[161]](#footnote-161) who are equal to the legal parents to all intents and purposes, and de facto parents, who are inferior and have only a lower level of legal parentage, which definitely isn’t equivalent to that of the legal parent.[[162]](#footnote-162)

Furthermore, calls very similar to my normative proposal regarding the option of awarding a variety of legal parental statuses can be found in the writing of some prominent scholars who maintain that the precise sort of parental status and its derivative parental rights should be determined in a mutual agreement. One good example is the suggestion of Martha M. Ertman, who has extensively implemented DLPBA both in and outside the traditional bionormative family.[[163]](#footnote-163) Likewise, Melanie B. Jacobs writes about the possibility of “relative rights for parents,” i.e., the exact scope of the parental authority and rights will be determined in accordance with the initial agreement.[[164]](#footnote-164)

Practically speaking, in the context of mitochondria replacement, DLPBA will dictate, according to the initial written agreement between the individuals involved in the reproduction procedure, whether the mitochondrial mother should be treated as only "semi" legal mother, something between egg provider and legally stranger who genetically donate nothing. Since she donates more than the latter, as she donates her mtDNA to the conceived child, but she absolutely donates much less than the nuclear mother.

Thus, the thumb rule is that if the sperm provider is known and involved, he will be recognized as the legal father besides the determination of the nuclear mother as the legal mother. The possibility of the "semi" mother can be offered as the sole legal mother of the conceived child or as additional one. The clear advantage of these options is that the resultant child will have for the least (almost) two legal parents. If the nuclear mother is interested to be the legal mother for all purposes and intents with all the attendant parental obligations and rights, besides her the mitochondrial mother should be treated as additional "semi" legal mother. In this unique arrangement, on the one hand, all the "genetic" parents will be recognized as the legal parents of the child, whereas, on the other hand, we don't resurrect the specter of three legal parents.

In the scenario of the artificial gametes, DLPBA may smoothly resolve the acute dilemma whether the genetic progenitor who provide the raw material that will eventually produce an artificial sperm and/or egg should be totally equal to "whole" genetic progenitors as sperm and/or egg providers. It can dictate that they also should be treated as only "semi" legal parents. Since, genetically speaking, they are more than third party, as they donate some genetic contribution to the conceived child, but they are less than sperm and/or egg providers as they don't contribute the reproductive materials. If an individual contributes his reproductive material, sperm or egg, s/he, as usual, will be treated as the legal parent of the child, if s/he donates only the raw material, s/he may be recognized as only "semi" legal parent. The latter determination can be as sole parent and/or besides the determination of the human sperm/egg as the legal parent for all purposes and intents with all the attendant parental obligations and rights. All by all, since in this scenario we don't open the pandora box of three legal parents, as for the most we can have only two, I assume that this compromised suggestion will be much less accepted.

Conclusion

Scholars have firmly stated even already in 1990 that we are currently living in the modern reproductive era, which is already in the midst of a "second reproductive revolution".[[165]](#footnote-165) In supporting this statement they maintain that we have witnessed the birth of children with two genetic mothers/three legal parents in the case of mitochondrial replacement, and which could soon see in the case of artificial gametes "two dad/mom" reproduction.[[166]](#footnote-166) Till the writing of these paragraphs in winter 2024, plenty articles and books have been dedicated to the intentional parenthood, DLPBA. All by all, they brightly teach us how it has beeon achieving a great dominance and efficacy in coherently and comprehensively resolving the various dilemmas of determining the legal parenthood that have been surfacing in ART during the "first reproductive revolution".[[167]](#footnote-167)

In this article I filled in the normative lacuna in the scientific literature how DLPBA can enormously assist us in also resolving these dilemmas in the abovementioned two cutting-edge reproductive innovations during the "second reproductive revolution". I explored with coherently developed legal-philosophical foundation how DLPBA is an appropriate, just and flexible normative doctrine for resolving these dilemmas not only in the "traditional" and the current various ART, but also in the seeable futural reproductive revolutions.[[168]](#footnote-168)

1. \* Visiting Research Scholar, New York University Law School (2011–2012); Professor of Law, Netanya Academic College; PhD (Law); M.A. (Law); LL.B. Bar-Ilan University. Author of the books The Jewish Family – Between Family Law and Contract Law (2017); Determining Legal Parentage – Between Family Law and Contract Law (2019); Parent-Child Relationships - Between Family Law and Contract Law (2022) (Heb.); Determining Legal Parentage by Agreement in Israel (2023) (Heb.).

   *See* mainly Susan L. Crockin & Howard W. Jones, Jr., Legal Conceptions: The Evolving Law and Policy of Assisted Reproductive Technologies (2009) (discussing how assisted reproductive technology has changed the definition of motherhood); Textbook of Assisted Reproductive Techniques ([David K. Gardner](https://www.taylorfrancis.com/search?contributorName=David%20K.%20Gardner&contributorRole=editor&redirectFromPDP=true&context=ubx) et al. eds., 5th Edition, 2017); Walter G. Johnson & Diana M. Bowman, *Inherited regulation for advanced ARTs: comparing jurisdictions’ applications of existing governance regimes to emerging reproductive technologies*, 9(1) Journal of Law and the Biosciences lsab034 (2022). [↑](#footnote-ref-1)
2. On this new technology see, besides the numerous articles that will be mentioned alongst the article, the following articles dedicated to mitochondrial donation: Rebecca Dimond, *Social and ethical issues in mitochondrial donation*, 115(1) Br Med Bull 173 (2015); Reuven Brandt, *Mitochondrial donation and ’the right to know’*, 42(10) J Med Ethics 678 (2016); Thana C de Campos & Caterina Milo, *Mitochondrial Donations and the Right to Know and Trace One’s Genetic Origins: an Ethical and Legal Challenge*, 32(2) International Journal of Law, Policy and the Family 170 (2018). [↑](#footnote-ref-2)
3. *Cf* [Dietram A. Scheufele](https://www.science.org/doi/abs/10.1126/science.aan3708#con1) et al., *U.S. attitudes on human genome editing*, 357(6351) Science 553 (2017); Human Genome Editing: Science, Ethics, and Governance (2017); [Jonathan Strecker](https://www.nature.com/articles/s41467-018-08224-4#auth-Jonathan-Strecker-Aff1-Aff2-Aff3-Aff4-Aff5) et al., *Engineering of CRISPR-Cas12b for human genome editing*, 10 [Nature Communications](https://www.nature.com/ncomms) 212 (2019). [↑](#footnote-ref-3)
4. *See*, for example, Gail H. Javitt & Kathy Hudson, *Regulating (for the Benefit ofi Future Persons: A Different Perspective on the FDA's Jurisdiction to Regulate Human Reproductive Cloning*, 2003 Utah L. Rev. 1201; Cross-Cultural Issues in Bioethics: The Example of Human Cloning ([Heiner Roetz](https://www.amazon.com/-/he/s/ref=dp_byline_sr_book_1?ie=UTF8&field-author=Heiner+Roetz&text=Heiner+Roetz&sort=relevancerank&search-alias=books) ed., 2006); [Robert Sparrow](https://onlinelibrary.wiley.com/authored-by/SPARROW/ROBERT), *Cloning, Parenthood, And Genetic Relatedness*, 20(6) [Bioethics](https://onlinelibrary.wiley.com/journal/14678519) 308 (2006). [↑](#footnote-ref-4)
5. *See* the following writing, besides these I will mention in the article: Anna Smajdor, Reproduction with artificial gametes: ethical and regulatory concerns unpublished Thesis (Imperial College London, 2008); Junaid Kashir et al., *Viability assessment for artificial gametes: the need for biomarkers of functional competency*, 87(5) Biology of reproduction 114 (2012); Myriam Martin-Inaraja & Cristina Eguizabal, *Artificial gametes: Where are we in 2021?* 8(3) [Medicina Reproductiva y Embriología Clínica](https://www.sciencedirect.com/journal/medicina-reproductiva-y-embriologia-clinica) (2021). [↑](#footnote-ref-5)
6. For the possibility of third party, who is not totally stranger to the child, to acquire parental rights, to a varying degree, see Pamela Laufer-Ukeles, *Money, Caregiving, and Kinship: Should Paid Caregivers Be Allowed to Obtain De Facto Parental Status*, 74 Mo. L. Rev. 25 (2009); Michael J. Sullivan, *Legalizing Parents and Other Caregivers: A Family Immigration Policy Guided by a Public Ethic of Care*, 23(2) Social Politics: International Studies in Gender, State & Society 263 (2016). [↑](#footnote-ref-6)
7. As the following representative statements: Kristine S. Knaplund, *Synthetic Cells, Synthetic Life, and Inheritance*, 45 Val. U. L. Rev. 1361, 1384 (2011) ("[…] it is time to start thinking about both regulatory issues and parentage issues for synthetic sperm, ova, and embryos."); Noy Naaman, *The Paradox of Same-Sex Parentage Equality*, 100 Wash. U. L. Rev. 229, 255 (2022) ([hereinafter: Naaman, The](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)) ("Continuous negotiation of the definition of who is recognized as a parent and how that recognition is achieved is an inevitable-and, some may say, even desirable-dynamic of the legal institution of parenthood".) and more extensively Noy Naaman, *Bordering Legal Parenthood*, 33 Yale J.L. & Human. 333 (2022). [↑](#footnote-ref-7)
8. For the growing acceptance of it in recent decades, see the leading articles which maintain that, in the modern era, it is the best model for determining legal parenthood, particularly in the context of reproductive technology, *see* John L. Hill, *What Does it Mean to be a “Parent”? The Claims of Biology as the Basis for Parental Rights*, 66 N.Y.U.L. Rev. 353, 413–20 (1991); Alexa E. King, *Solomon Revisited: Assigning Parenthood in the Context of Collaborative Reproduction*, 5 UCLA Women’s L.J. 329, 367–99 (1995); Jesse M. Nix, “*You Only Donated Sperm”: Using Intent to Uphold Paternity Agreements*, 11 J. L. & Fam. Stud. 487, 494 (2009); Andrea E. Stumpf, *Redefining Mother: A Legal Matrix for New Reproductive Technologies*, 96 Yale L.J. 187, 192-208 (1986); Katherine M. Swift, *Parenting Agreements, The Potential Power of Contract, And the Limits of Family Law*, 34 Fla. St. U.L. Rev. 913, 930–57 (2007); Deborah H. Wald, *The Parentage Puzzle: The Interplay Between Genetics, Procreative Intent, and Parental Conduct in Determining Legal Parentage*, 15 Am. U.J. Gender Soc. Pol’y& L. 379, 388-9 (2007(; Mary Patricia Byrn & Erica Holzer, *Codifying the Intent Test*, 41 Wm. Mitchell L. Rev. 130 (2015); Heather Kolinsky, *The Intended Parent: The Power and Problems Inherent in Designating and Determining Intent in the Context of Parental Rights*, 119 Penn St. L. Rev. 801 (2015). [↑](#footnote-ref-8)
9. *See*, for example, Yehezkel Margalit, *Towards Establishing Parenthood by Agreement in Jewish Law*, 26 Am. U. J. Gender Soc. Pol'y & L. 647 (2018); ibid, The Jewish Family – Between Family Law and Contract Law 135-73 (2017); and more extensively ibid, *Bridging the Gap Between Intent and Status: A New Framework for Modern Parentage,* 15(1) Whittier Journal of Child and Family Advocacy 1 (2016) ([hereinafter: Margalit, Bridging](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-9)
10. To be more precise a mitochondrial donor contributes less than 0.001% of her DNA, see Robert W. Taylor & Doug M. Turnbull, *Mitochondrial DNA Mutations in Human Disease*, 6 Nature Reviews Genetics 389 (2005), was mentioned in Amy B. Leisner, *Parentage Disputes in the Age of Mitochondrial Replacement Therapy*, 104 Geo. L.J. 413, 417, 431 (2016); Daniel Green, *Assessing Parental Rights for Children with Genetic Material from Three Parents*, 19 Minn. J.L. Sci. & Tech. 251, 265 (2018). [↑](#footnote-ref-10)
11. *See* respectively César Palacios-González, *Genealogical obscurement: mitochondrial replacement techniques and genealogical research*, Journal of Medical Ethics (2023); Suzanna Tai, *Mitochondrial replacement therapy and the “three parent baby”*, 9(1) SURG Journal 48 (2016); Paula Amato et al., *Three-parent in vitro fertilization: gene replacement for the prevention of inherited mitochondrial diseases*, 101(1) [Fertility and Sterility](https://www.sciencedirect.com/journal/fertility-and-sterility) 31 (2014), [Three-parent in&nbsp;vitro fertilization: gene replacement for the prevention of inherited mitochondrial diseases (sciencedirectassets.com)](https://pdf.sciencedirectassets.com/271326/1-s2.0-S0015028213X00214/1-s2.0-S0015028213032901/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEFoaCXVzLWVhc3QtMSJHMEUCIQCy9F0TaKsoIvYP42c9K1Sx9yzXXBnwhb6mwkuhQgdKkAIgPvdJ2wYN6Uuqj55CD0ufc39xOHJD732PuN7BDsSdcO0quwUIo%2F%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FARAFGgwwNTkwMDM1NDY4NjUiDBs%2BedgMUMCg4nlCxCqPBZMll%2FZFzHJKa%2B7zopfTxlufYOSql6USdMBwrDkdbfu6ZZ3FGhfygBHvbLueWR%2B947KhP21ylm0DqBpye7Zs%2BdiDGL%2FkGDo%2FF8K5Ym8mkSPo74JvViswA4o4fXU3rSgTXELmvdrFyOFVDU4GlMedBH3nvtF3XxlL9zriZY16PXf4LciO%2B12RBJVKR%2BQtYTXB5FT41g9xpEEfgKpmmUx1%2FPGvmw%2Bo6YplYVkEEfmEZhoH65sQlnQ%2Fd8QBjUxDeXxuoXsDIe69KycpgwRxA9WO9ROLG0iHzfhwREYEMNohWGGKy3ZyFU2DG1n8MoWPzZcp7lx7mFgRkXMgwA2oRuM22NmWqGnuXSPcZHyk1Mz%2B7tuhqjHd2cS9gVaUGaYA6IA19u1o7W6LpaIWcOB3fe9TiY9E%2BpvcoUQPi%2FLKESiTPTYYmHW1wVkmbNKOxfd6dqQP3ttZEurJy%2Ff6QNpswNQaUgUjpyguMXPC%2B%2BIKfhqDmDEFUzNo%2BkLQpiPQCOxtstAewSZTM7nJwLlpQeHvNx1rpAW4zCECiU9zuMIaJrJArSGwgG4W%2BtkIRw%2BhcWRmkmZzttUt8WKHMx4LrNLbk3asODHwbt0Bm1qckxfmy6pVIYlvliMHU1RmAWC%2F1MR9ceYWSCmSEKUUWEzog%2FBtiuNOwMxfa%2BKvgnVUzoUTUpo2kB2sZwuZQWKQgVW6%2BByu%2Bg3viQu9lx%2FilSMPHg0xnWcMIplhrr8PUjQ%2BALa3k%2Fh8NGYdQMRL8D94OrCIUUYMvDTxxGgcFTbXcgi%2FrUO%2B97K13b%2BDAXv%2F5h6WWIpiwf%2B%2FRq%2BY%2BXXMJAmpt%2FToerhyULNSwjhRahQ5Gy4QkCW5NmElEF4Qs6pXzwxOHkagnue9oPcw0%2BbcqgY6sQFhauGeoAJg6%2B0tEVhK%2BJ%2F9iNasWzSVARKlEOCmXqdoWTUfLRyKjvaon%2FUq7FtkSUyVR%2FXxTKQWfmjdylXwDfMF7hrEnKx%2Fnyq8OFWCVKEshEX8SU6v8Vkv85Ehi6tscVINC0TTSNano3xRyQiObrFNIaMEMnfQXXKPXopfsgSLAXzC9FfxZDpFxMUxUmHkfoQeCwg1bBMreG4qWH8MJ%2BT4NoCjkmBrHAkn3yEDBjFEB3E%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20231117T100459Z&X-Amz-SignedHeaders=host&X-Amz-Expires=299&X-Amz-Credential=ASIAQ3PHCVTYZ2FEFG6G%2F20231117%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=f824825feacf3ac1b3b15eb340a1faf8810e01ddf4b1857a7a8a1069a3a85b7a&hash=df76f1f54cbd2fc7cffb7bded4c523096a1d8ec8625bc0f5bd3f49b546c01b96&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S0015028213032901&tid=spdf-3adb6aab-64b4-40e3-817b-192ecd67493c&sid=e2d871543ccb67491f9aede-e1cdd1334d48gxrqa&type=cli). [↑](#footnote-ref-11)
12. *See* Marianne Schwartz & John Vissing, *Paternal Inheritance of Mitochondrial DNA*, 347 New Eng. J. Med. 576 (2002), <http://www.nejm.org/doi/full/10.1056/NEJMoa020350>; Rosa J. Castro, *Mitochondrial Replacement Therapy: The US and UK Regulatory Landscapes*, 3 Journal of Law and the Biosciences 726 (2016), [Mitochondrial replacement therapy: the UK and US regulatory landscapes | Journal of Law and the Biosciences | Oxford Academic (oup.com)](https://academic.oup.com/jlb/article/3/3/726/2566730). [↑](#footnote-ref-12)
13. Rohin Bhatt, *Three Is Not a Crowd: A Case for Granting Parental Rights to Mitochondrial DNA Providers*, 6 Voices in Bioethics (2020); and more extensively in National Academics of Sciences. Engineering. and Medicine, MIOCHONDRIAL REPLACEMENT TECHNIQUES: ETHICAL. SOCIAL, AND POLICY CONSIDELRATIONS (Anne Claiborne et al. eds., 2016), [Mitochondrial Replacement Techniques: Ethical, Social, and Policy Considerations - PubMed (nih.gov)](https://pubmed.ncbi.nlm.nih.gov/27054230/). [↑](#footnote-ref-13)
14. *See* respectively Casie Curtin, A Literature Review on Mitochondrial Dysfunction and “Three-Parent” Babies (Honors Thesis, School of Biology, Salem State University, 2020), [auto\_convert.pdf (salemstate.edu)](https://digitalrepository.salemstate.edu/bitstream/handle/20.500.13013/742/auto_convert.pdf?sequence=2&isAllowed=y); Masahito Tachibana et al., *Towards Germline Gene Therapy of Inherited Mitochondrial Diseases*, 493 Nature 627, 627 (2013) ("[…] in USA alone, between 1,000 to 4,000 children are born every year with mtDNA diseases"); Amato, *supra* note 11, at 31. [↑](#footnote-ref-14)
15. *See* Leisner, *supra* note 10, at 418. *See also* John A. Robertson, *Technology and Motherhood: Legal and Ethical Issues in Human Egg Donation*, 39 Case W. Res. L. Rev. 1 (1988); Joseph Gregorio, *Hatching a Plan towards Comprehensive Regulations in Egg Donation*, 65 DePaul L. Rev. 1283 (2016). [↑](#footnote-ref-15)
16. *Cf* Jacques Cohen & Mina Alikani, *The biological basis for defining bi-parental or tri-parental origin of offspring from cytoplasmic and spindle transfer*, 26(6) Reprod Biomed Online 535 (2013); [John](https://pubmed.ncbi.nlm.nih.gov/?term=Zhang+J&cauthor_id=28385334) Zhang et al., *Live birth derived from oocyte spindle transfer to prevent mitochondrial disease*, 34(4) Reproductive Biomedicine Online 361 (2017); Reza K. Oqani et al., *Artificial Oocyte: Development and Potential Application*, 11(7) Cells 1135 (2022). [↑](#footnote-ref-16)
17. *See* mainly [Lyndsey Craven](https://pubmed.ncbi.nlm.nih.gov/?term=Craven+L&cauthor_id=20393463) et al., *Pronuclear transfer in human embryos to prevent transmission of mitochondrial DNA disease*, 465(7294) Nature 82 (2010); [Laura Riley](https://www.taylorfrancis.com/search?contributorName=Laura%20Riley&contributorRole=author&redirectFromPDP=true&context=ubx), *The 'three parent' misnomer: Mitochondrial DNA donation under the HFE Act*, Revisiting the Regulation of Human Fertilisation and Embryology 98 ([Kirsty Horsey](https://www.taylorfrancis.com/search?contributorName=Kirsty%20Horsey&contributorRole=author&redirectFromPDP=true&context=ubx) ed., 2015); [Hana](https://pubmed.ncbi.nlm.nih.gov/?term=Farnezi%20HC%5BAuthor%5D) C. M. Farnezi et al., *Three-parent babies: Mitochondrial replacement therapies*, 24(2) JBRA Assist Reprod. 189 (2020). [↑](#footnote-ref-17)
18. *See* respectively Jacques Cohen et al., *Birth of infant after transfer of anucleate donor oocyte cytoplasm into recipient eggs*, [350(9072](https://www.sciencedirect.com/journal/the-lancet/vol/350/issue/9072)) Lancet 186 (1997); Amato et al., *supra* note 11, at 32; Green, *supra* note 10, at 257. [↑](#footnote-ref-18)
19. *See*, amongst others, Vera Lúcia Raposo, *Is Three a Crowd in Reproduction? (The Authorization of Mitochondrial Donation in the UK)*, 19(4) JBRA – Assisted Reproduction 252 (2015); [Rebecca Dimond](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Rebecca%20Dimond%22) & [Neil Stephens](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Neil%20Stephens%22), *Three persons, three genetic contributors, three parents: Mitochondrial donation, genetic parenting and the immutable grammar of the ‘three x x’*, 22(3) Health 240 (2018); [Catherine](https://journals.sagepub.com/doi/full/10.1177/0162243920934542#con) Mills*,* *Nuclear Families: Mitochondrial Replacement Techniques and the Regulation of Parenthood*, 46(3) Science, Technology, & Human Values 507 (2021). [↑](#footnote-ref-19)
20. *See*, for example, [Dimond](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Rebecca%20Dimond%22) & [Stephens](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Neil%20Stephens%22), ibid; Maricris Lactao Real Prendingue, *Avoiding Designer Babies by Regulating Mitochondrial Replacement Therapy under a Child-Oriented Policy Framework*, 32 Regent U. L. Rev. 163, 163 (2019); Mahesh Deshpande & Shashikala Gurpur, *Made to Order Baby? Ethical and Legal Dimensions of Three Parent Baby and Germline Therapy*, 24 J. Lgal Ethical & Regul. Isses 1, 1, 2 (2021). [↑](#footnote-ref-20)
21. *See* mainly Karinne Ludlow, *Genetic identity concerns in the regulation of novel reproductive technologies*, 7(1) Journal of Law and the Biosciences 1 (2020), [lsaa004.pdf (silverchair.com)](https://watermark.silverchair.com/lsaa004.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA04wggNKBgkqhkiG9w0BBwagggM7MIIDNwIBADCCAzAGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQMYv6YDQKzn4LAWLXGAgEQgIIDARBmliiCCPkP13uYpBSU_e6WFb0iKOR_XwBgpWrRpZmq3sLt8dtYVopq8YKM30JuIVprjB1PEBYaR1qbE21bx3GLjW-JzyCAVsmgVuQqJYoOlwW8anVe6SKoXQPYqtPOjbCDL6da7idd9il5FuptDrr0PLUB2noLb0ajCiFu3OxQHFecUtzGSCNufe5tfQ5oSv4PPehV5HgC3XWFqncAi9-WHiTAjZsqpAWFemdbP7PWHJdteJU-SQMHKMnAVIqCh27LI_MuB1zGvbu8dRQKvyrXVpqZkjgCylQ0q-1W-MpirU3otcFyM1NqWjQUS_vbUZ5v5EiosG90-XrP4X6venwlECHNb_d2SmTGunFcakoiXaQ9vQbb9tM2hPLR081tqbltNLEqqyaouoVCnZhESEomEXKrVy4T40WqwXOWsVY9tHwuQOW73Qc-8wVT_FNhLmLSo1lx9JF5W8b812FzE-F6uO9BdWHtuyQEkjHmkU-1aZ9DSUkQ8fmVRB0RxUg7C4HGXb5yJ_eiW5MlhttWqdboCGXgBd6bqJDmOs-v3ogR2BwPqzNR2xJnTF3Z_1BSbX5zpWl3OgIWZp8sp-N6_5JZ93u-jZFijv3GtC5tMaM4rHruxmiMMeSp5Q2yYzXMyIqWMmyhgdAsJyL61i-4iS3y-7aGNU-_4JpbdaR-QXLslYz26olRhXv0Xjx2dFndUwptEXuahuSHLcDP2-ksdqdbfUqc2YLlUDLX_Tv4G1yrDYd9e0jLoOGLwy27twq3S2r6BK-6XnFuyNX3cgX79YffXMj7ylAW2lnJBeaZ885sUI370g_V526rNM8qBonWJi0VJMRuPHL4dTXNBB1fhXcyphXDxVsgkVoMP_LnRsr1ojaUKjwYslL3Cyh1dSLseaK7fIINsH2IYukn7Bg80X63Gwr6zOXc99CNy1i3X6I8wsloM7783zTGjYOU2mheFTMOpEoUzjiQHpDrJTdmE7w8Ode99AxPyeXPQnARcpJtpLr7jyjIc3p1n6zodPsSpc0); Bhatt, *supra* note 13; Kristina Kékesi-Lafrance, In the Context of Mitochondrial Replacement Therapy, Does Genetic Manipulation Produce Triparental Children in the Eyes of the Law? unpublished Thesis (Master of Laws in Bioethics, McGill Faculty of Law, 2022), McGill University (Canada) ProQuest Dissertations Publishing,  2022, [In the Context of Mitochondrial Replacement Therapy, Does Genetic Manipulation Produce Triparental Children in the Eyes of the Law? - ProQuest](https://www.proquest.com/openview/6814484a6b7f211902fa6988fcc8900d/1?pq-origsite=gscholar&cbl=18750&diss=y). [↑](#footnote-ref-21)
22. Amato et al., *supra* note 11, at 32-5; Green, *supra* note 10, at 258; [I. Glenn Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., *Transatlantic lessons in regulation of mitochondrial replacement therapy*, 348(6231) Science 178 (2015) (hereinafter: [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., Transatlantic), [Transatlantic lessons in regulation of mitochondrial replacement therapy | Science](https://www.science.org/doi/10.1126/science.aaa8153) [↑](#footnote-ref-22)
23. Raphaëlle Dupras-Leduc et al., *Mitochondrial/Nuclear Transfer: A Literature Review of the Ethical, Legal and Social Issues*,  1(2) [Canadian Journal of Bioethics 1 (2018), [Mitochondrial/Nuclear Transfer: A Literature Review of the Ethical, Legal and Social Issues (erudit.org)](https://www.erudit.org/en/journals/bioethics/2018-v1-n2-bioethics04466/1058264ar.pdf). For setting out the key ethical issues, *see also* NUFFIELD COUNCIL ON BIOETHICS, NOVEL TECHNIQUES FOR THE PREVENTION OF MITOCHONDRIAL DNA DISORDERS: AN ETHICAL REVIEW (2012) [(hereinafter: NUFFIELD, NOVEL‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)) (raising safety, efficacy, and ethical issues in the context of mitochondrial replacement); Rebecca Dimond, *Techniques of Donation: 'Three Parents' Anonymity and Disclosure*, 3 JMLE, Journal of Medical Law and Ethics 165 (2015).](http://www.erudit.org/en/journals/bioethics/)  [↑](#footnote-ref-23)
24. Leisner, *supra* note 10, at 432-4; [Dimond](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Rebecca%20Dimond%22) & [Stephens](https://www.jstor.org/action/doBasicSearch?Query=au%3A%22Neil%20Stephens%22), *supra* note 19; Dimond, ibid. [↑](#footnote-ref-24)
25. For these two "brand-new" possible mothers, see [Heidi Mertes](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=HEIDI%20MERTES&eventCode=SE-AU) & [Guido Pennings](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=GUIDO%20PENNINGS&eventCode=SE-AU), *Embryonic Stem Cell–Derived Gametes and Genetic Parenthood: A Problematic Relationship*, 17(1) Cambridge Quarterly of Healthcare Ethics 7 (2008); Green, *supra* note 10; George P. II Smith, *Pursuing a Right to Genetic Happiness*, 22 J.L. Soc'y 1 (2022). [↑](#footnote-ref-25)
26. César Palacios-González, *Does egg donation for mitochondrial replacement techniques generate parental responsibilities?* 44 Journal of Medical Ethics 817, 818 (2018) [(hereinafter: ‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)Palacios-González, Does). For the importance of the mitochondrial DNA, see also [S. Matthew Liao](https://onlinelibrary.wiley.com/authored-by/Liao/S.+Matthew), *Do Mitochondrial Replacement Techniques Affect Qualitative or Numerical Identity?* 31(1) Bioethics 20 (2017); Bhatt, *supra* note 13, at 1. [↑](#footnote-ref-26)
27. For a similar contention, see Amato et al., *supra* note 11, at 32; Leisner, *supra* note 10, at 420; Green, *supra* note 10, at 257. [↑](#footnote-ref-27)
28. *See*, amongst others, the various references regarding the quantity and the quality claims brought by Palacios-González, Does, *supra* note 26, at 818-9, as John B. Appleby, *Should mitochondrial donation be anonymous?* 43(2) J Med Philos 261 (2018); Kékesi-Lafrance, *supra* note 21. [↑](#footnote-ref-28)
29. For the notion of "genetic identity" see Emily Jackson, *Degendering Reproduction*, 16 Med. L. Rev. 346 (2008) and more extensively Ludlow, *supra* note 21. For the British calls to prohibit any modifications to the germ line genetic identity, see [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., Transatlantic, *supra* note 22, at 179. [↑](#footnote-ref-29)
30. For the HFEA massive regulation of this technology and to the parliament reaction to it, see respectively Human Fertilisation and Embryology Authority (HFEA), Mitochondria replacement consultation: advice to government (2013), [mitochondria\_replacement\_consultation\_-\_advice\_for\_government.pdf (hfea.gov.uk)](https://www.hfea.gov.uk/media/2618/mitochondria_replacement_consultation_-_advice_for_government.pdf); UK Department of Health, Mitochondrial donation: Government response to the consultation on draft regulations to permit the use of new treatment techniques to prevent the transmission of a serious mitochondrial disease from mother to child (2014). *See also* Revisiting the Regulation of Human Fertilisation and Embryology ([Kirsty Horsey](https://www.taylorfrancis.com/search?contributorName=Kirsty%20Horsey&contributorRole=author&redirectFromPDP=true&context=ubx) ed., 2015). [↑](#footnote-ref-30)
31. *See* mainly [S. Matthew Liao](https://onlinelibrary.wiley.com/authored-by/Liao/S.+Matthew), *Do Mitochondrial Replacement Techniques Affect* *Qualitative or Numerical Identity?* 31(1) Bioethics 20 (2017); NUFFIELD, NOVEL, *supra* note 23; Palacios-González, Does, *supra* note 26, at 818 ("If we grant the above then we have to accept that both MST and PNT affect the numerical identity of eggs and zygotes."). [↑](#footnote-ref-31)
32. As Sonja van Wichelen & Marc de Leeuw, *Biolegality: How Biology and Law Redefine Sociality*, 51 Annu. Rev. Anthropol. 383 (2022). *See also* Catherine Nash, *Genetic kinship*, 18(1) Cultural Studies 1 (2004); [Mertes](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=HEIDI%20MERTES&eventCode=SE-AU) & [Pennings](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=GUIDO%20PENNINGS&eventCode=SE-AU), *supra* note 32 (“minor genetic mother” “major genetic mother”). [↑](#footnote-ref-32)
33. As the following articles deal with: S J. Oz, *Genetic Mother vs. Surrogate Mother: Which Mother Does the Law Recognize - A Comparison of Jewish Law, American Law, and England's Law*, 6 Touro Int'l L. Rev. 437 (1995); [Rosalie](https://link.springer.com/article/10.1023/A:1009956218800#auth-Rosalie-Ber-Aff1) Ber, *Ethical Issues in Gestational Surrogacy*, 21 Theor Med Bioeth 153 (2000); Jennifer S. Hendricks, *Essentially a Mother*, 13 Wm. & Mary J. of Women & L. 429 (2007) [(hereinafter: Hendricks, Essentially](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-33)
34. *See*, for example, [K.M. v. E.G., 117 P.3d 673 (Cal. 2005)](https://www.lexis.com/research/buttonTFLink?_m=f80c9052c14ef21dfaddcb0ad5ca4467&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b75%20U.%20Cin.%20L.%20Rev.%20275%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=236&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b117%20P.3d%20673%2cat%20675%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLbVlb-zSkAk&_md5=803d286f8ebc387ec4559fcc5fead646); D.M.T. v. T.M.H., 129 So. 3d 320 (Fla. 2013) and the other rulings brought by Francesca Rebecca Acocella, *Love Is Love: Why Intentional Parenting Should Be the Standard for Two-Mother Families Created through Egg-Sharing*, 14 Cardozo Pub. L. Pol'y & Ethics J. 479 (2016). [↑](#footnote-ref-34)
35. For the legal recognition of it in California, see Cal. Fam. Code § 7612(c). [↑](#footnote-ref-35)
36. For this notion, see Robert N Lightowlers et al., *Mammalian mitochondrial genetics: heredity, heteroplasmy and disease*, 13(11) Trends in Genetics 450 (1997); Brendan A.I. Payne et al., *Universal heteroplasmy of human mitochondrial DNA*, 22(2) Human Molecular Genetics 384 (2013); [James B. Stewart](https://www.nature.com/articles/nrg3966#auth-James_B_-Stewart-Aff1) & [Patrick F. Chinnery](https://www.nature.com/articles/nrg3966#auth-Patrick_F_-Chinnery-Aff2), *The dynamics of mitochondrial DNA heteroplasmy: implications for human health and disease*, 16 [Nature Reviews Genetics](https://www.nature.com/nrg) 530 (2015). [↑](#footnote-ref-36)
37. Knaplund, *supra* note 7, at 1377. That is actually an important advancement in synthetic biology. For the latter phrase, see mainly [Steven A. Benner](https://www.nature.com/articles/nrg1637#auth-Steven_A_-Benner-Aff1) & [A. Michael Sismour](https://www.nature.com/articles/nrg1637#auth-A__Michael-Sismour-Aff1), *Synthetic biology*, 6 [Nature Reviews Genetics](https://www.nature.com/nrg) 533 (2005); Matthias Heinemann & Sven Panke, *Synthetic biology—putting engineering into biology*, 22(22) Bioinformatics 2790 (2006); [D. Ewen Cameron](https://www.nature.com/articles/nrmicro3239#auth-D__Ewen-Cameron-Aff1-Aff2) et al., *A brief history of synthetic biology*, 12 [Nature Reviews Microbiology](https://www.nature.com/nrmicro) 381 (2014). [↑](#footnote-ref-37)
38. I chose the term "artificial eggs" and not "artificial oocytes" since most of the academic literature also use this phrase. For example, in google scholar there are over 2000 titles of the first and only 131 titles of the latter. From the same reason, I don't use the phrase "synthetic egg/ovum" since its usage is very rare. [↑](#footnote-ref-38)
39. *See*, for example, [Zsolt Peter Nagy](https://pubmed.ncbi.nlm.nih.gov/?term=Nagy+ZP&cauthor_id=16176674)  & [Ching-Chien Chang](https://pubmed.ncbi.nlm.nih.gov/?term=Chang+CC&cauthor_id=16176674), *Current advances in artificial gametes*, 11(3) Reproductive BioMedicine Online 332 (2005); Daniela Cutas et al., *Artificial Gametes: Perspectives of Geneticists, Ethicists and Representatives of Potential Users*, 17 Med., Health Care & Phil. 339 (2014); Barbara Advena-Regnery et al., *Framing the Ethical and Legal Issues of Human Artificial Gametes in Research, Therapy, and Assisted Reproduction: A German Perspective*, 32 Bioethics 314 (2018). [↑](#footnote-ref-39)
40. [Evelyn E. Telfer](https://obgyn.onlinelibrary.wiley.com/authored-by/Telfer/Evelyn+E.) & Kelsey M. Grieve, *Artificial gametes The oocyte*, in Textbook of Assisted Reproductive Techniques 381 ([David K. Gardner](https://www.taylorfrancis.com/search?contributorName=David%20K.%20Gardner&contributorRole=editor&redirectFromPDP=true&context=ubx) et al. eds., 5th Edition, 2017). *See also* Saskia Hendriks et al., *Potential consequences of clinical application of artificial gametes: a systematic review of stakeholder views*, 21(3) Human Reproduction Update 297 (2015); Anna Smajdor & Daniela Cutas, Artificial Gametes (The Nuffield Council on Bioethics. 2015), [Name: (diva-portal.org)](https://www.diva-portal.org/smash/get/diva2:894667/FULLTEXT01.pdf). [↑](#footnote-ref-40)
41. *See* mainly [Karim Nayernia](https://www.nature.com/articles/3700429#auth-Karim-Nayernia-Aff1) et al., *Derivation of male germ cells from bone marrow stem cells*, 86 [Laboratory Investigation](https://www.nature.com/labinvest) 654 (2006); Nadja Drusenheimer et al., *Putative human male germ cells from bone marrow stem cells*, 63 Society of Reproduction and Fertility supplement 69 (2007); Jinlian Hua et al., *Derivation of male germ cell-like lineage from human fetal bone marrow stem cells*, 19(1) [Reproductive BioMedicine Online](https://www.sciencedirect.com/journal/reproductive-biomedicine-online) 99 (2009). [↑](#footnote-ref-41)
42. *See*, for example, Bruce L. Wilder, *Assisted Reproduction Technology: Trends and Suggestions for the Developing Law*, 18 J. Am. Acad. Matrimonial Law. 177, 190 (2002); David Cyranoski, *Mouse eggs made from skin cells in a dish*, 538(7625) Nature (2016); [I. Glenn Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., *Disruptive reproductive technologies*, 9(372) Science Translational Medicine eaag2959 (2017) (hereinafter: [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., Disruptive). [↑](#footnote-ref-42)
43. *See*, amongst others, Anna Smajdor & A J Newson, *Artificial gametes: new paths to parenthood?*, 31

    Journal of Medical Ethics 184 (2005); [Satoshi Kishigami](https://link.springer.com/article/10.1111/j.1749-0774.2005.00001.x#auth-Satoshi-Kishigami-Aff1) et al., *Cloned mice and embryonic stem cell establishment from adult somatic cell*, 19 [Human Cell](https://link.springer.com/journal/13577) 2 (2006); Ryan Morgan, *Embryonic Stem Cells and Consent: Incoherence and Inconsistency in the UK Regulatory Model*, 15 Med. L. Rev. 279 (2007). [↑](#footnote-ref-43)
44. *See*, for example, Charles A. Easley et al., *Gamete derivation from embryonic stem cells, induced pluripotent stem cells or somatic cell nuclear transfer-derived embryonic stem cells: state of the art*, 27(1) Reproduction, Fertility and Development 89 (2014); Jan Tesarik et al., *Human artificial oocytes from patients’ somatic cells: past, present and future*, 2(1) [Reproduction and Fertility](https://raf.bioscientifica.com/view/journals/raf/raf-overview.xml) H1 (2021), [Human artificial oocytes from patients’ somatic cells: past, present and future in: Reproduction and Fertility Volume 2 Issue 1 (2021) (bioscientifica.com)](https://raf.bioscientifica.com/view/journals/raf/2/1/RAF-20-0039.xml); [Dustin Gooßens](https://onlinelibrary.wiley.com/authored-by/Goo%C3%9Fens/Dustin), *The use of human artificial gametes and the limits of reproductive freedom*, 35(1) Bioethics 72 (2021). [↑](#footnote-ref-44)
45. *See* mainly Catherine D. Payne, *Stem Cell Research and Cloning for Human Reproduction: An Analysis of the Laws, the Direction in Which They May Be Heading in Light of Recent Developments, and Potential Constitutional Issues*, 61 Mercer L. Rev. 943, 950 (2010); Oqani et al., *supra* note 16. [↑](#footnote-ref-45)
46. *See* César Palacios-González et al., *Multiplex parenting: IVG and the generations to come*, 40 Journal of Medical Ethics 752 (2014); [Evelyn E. Telfer](https://obgyn.onlinelibrary.wiley.com/authored-by/Telfer/Evelyn+E.), *Future developments:* *In vitro growth (IVG) of human ovarian follicles*, [98(5](https://obgyn.onlinelibrary.wiley.com/toc/16000412/2019/98/5)) AOGS 653 (2019); Evelyn E. Telfer & Claus Yding Andersen, *In vitro growth and maturation of primordial follicles and immature oocytes*, 115(5) [Fertility and Sterility](https://www.sciencedirect.com/journal/fertility-and-sterility) 1116 (2021). [↑](#footnote-ref-46)
47. *See* John J. Eppig & Allen C. Schroeder, *Capacity of Mouse Oocytes from Preantral Follicles to Undergo Embryogenesis and Development to Live Young after Growth, Maturation, and Fertilization in Vitro*, 41(2) Biology of Reproduction 268 (1989); Evelyn E. Telfer & Marie Mclaughlin, *Strategies to support human oocyte development in vitro*, 56 Int. J. Dev. Biol. 901 (2012); Saskia Hendriks et al., *Artificial Gametes: A Systematic Review of Biological Progress Towards Clinical Application*, 21 Human reproduction update 285 (2015). [↑](#footnote-ref-47)
48. Presidential Comm'n for the Study of Bioethical Issues, New Directions: The Ethics of Synthenc Biology and Emerging Technologies 67 (2010). This quotation was discussed by [Ingrid Schneider](https://link.springer.com/chapter/10.1007/978-94-017-9196-0_10#auth-Ingrid-Schneider), *Exclusions and Exceptions to Patent Eligibility Revisited: Examining the Political Functions of the “Discovery” and “Ordre Public” Clauses in the European Patent Convention and the Arenas of Negotiation*, Synbio and Human Health: A Challenge to the Current IP Framework? 145 ([Iñigo de Miguel Beriain](https://link.springer.com/book/10.1007/978-94-017-9196-0#author-1-0) & [Carlos María Romeo Casabona](https://link.springer.com/book/10.1007/978-94-017-9196-0#author-1-1) eds., 2014); [Ilaria de Lisa](https://link.springer.com/chapter/10.1007/978-3-030-51206-4_2#auth-Ilaria-de_Lisa), [The Patentability of Synthetic Biology Inventions](https://link.springer.com/book/10.1007/978-3-030-51206-4): New Technology, Same Patentability Issues? 7 (2020). [↑](#footnote-ref-48)
49. *See* Anna Smajdor & Daniela Cutas, *Will Artificial Gametes End Infertility?* 23(2) Health Care Analysis 134 (2013); Sonia M. Suter*, In vitro gametogenesis: just another way to have a baby?* 3(1) Journal of Law and the Biosciences, 87 (2015), [In vitro gametogenesis: just another way to have a baby? (silverchair.com)](https://watermark.silverchair.com/lsv057.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA0gwggNEBgkqhkiG9w0BBwagggM1MIIDMQIBADCCAyoGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQM3ryXdtfUGZJ6IO4uAgEQgIIC-8T_IcyY8HPC89Y4pcofU0EE9rTZ_5JA-4YUHBQqBcJW36BMnfCYRFwmfadEq5FRPTLuzXi7S33rJdeToZ5ctE7jKZYq8nHCXHtShcU0ea9jMoksv8in7FOljIwWEu6-7L0FSjR0JO-DyCxUW1jJMyb1gCdHbSVzx4Ymt2sMOUY_BkmUPTzuBdtshcNOXUI09gGE-ajn8GF_2HPn1GYu3sv3iVHh1b8Ayk6g0W9fG2J7_DjSl2yMFt2FD3jfyjV2vZiMWPVpzh8Vl1qZONnTxaZmUTWxXYIOXEfrqWWvXZwd1ygS2IZA1sEHB_OK6uukYnH6gtqAZ-VsNkkmfdbDu7qjnO3_fBqQyq4PFR3DsxdzIm_KVFYuQTtvG_g7peGyBWjpJHmkULQZrCBaIBdq6N8oacSc5wd6KWK9DoVx5skcaT--966S9kUQ7nkUOIUX3DWmMS3393m1QeOsoncV4HNORWh7CZvdImFBMSxtmulCR60NGQ_0q8cRlU_HCI6qO2KS71g2w9wQj1lOEnsRLnrw_BM6C40LFem381SvCZ9FykudHI5EzcJjZFvwmeteGdnOPCk6MsXg8iSYM21P9tEQ6WrUtkb53Wud7CFWQWMaBRIO1OWnEGHnJO-htAQg0blDtbLt2K88-R_q1JC-xwmnAfsKh7-O7WOwmttyOEweR0cLiPKiMgVAUkyalVD6f8-irrBpNHuOtGawQAM6dDhb_PIe39haB-rPv_W9nqAyaUfKupnsL1L4i-VdQ4fEWQPErU9M2DG5aDmryk-NkUKv-bEsYum4xd3sC1DaQYGyPI33P6-SGnlbJbLU5GYa0auweKebZwp9rzdJBLZJeMWQ5JEOeuB71f8JgPaPy5YM9t-drV615p4yV5mZL5aGyBFbBBg6chVPzs-kKJ0u3prodYG-Ry8BCKYiwXBgwtafB_eyBtTI-Aj7aTslC5nZf5Wptr-AQTs9S-hrDnsagWXZjRtL2S7qTVqICJf6w6DzRQKJbMlMeoYOX2Y); Henry T. Greely, The End of Sex and the Future of Human Reproduction 131-5 (2016) (cross-sex gametes). [↑](#footnote-ref-49)
50. *See* [Kishigami](https://link.springer.com/article/10.1111/j.1749-0774.2005.00001.x" \l "auth-Satoshi-Kishigami-Aff1) et al., *supra* note 43; [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959" \l "con1) et al., Disruptive, *supra* note 42; Jennifer A. Chandler, *Does a Patient Have a Constitutional Right to the Freedom of Medical Research: Regenerative Medicine and Therapeutic Cloning Research in Canada*, 6 Mcgill J.L. & Health 1, 17, 26, 51, 53 (2012). [↑](#footnote-ref-50)
51. *See* [Daniela Cutas](https://link.springer.com/article/10.1007/s10728-016-0321-7#auth-Daniela-Cutas-Aff1-Aff2) & [Anna Smajdor](https://link.springer.com/article/10.1007/s10728-016-0321-7#auth-Anna-Smajdor-Aff3), *I am Your Mother and Your Father!” In Vitro Derived Gametes and the Ethics of Solo Reproduction*, 25 [Health Care Analysis](https://link.springer.com/journal/10728) 354 (2017); Zhi-Kun Li et al*., Generation of Bimaternal and Bipaternal Mice from Hypomethylated Haploid ESCs with Imprinting Region Deletions*, 23 Cell stem cell 1 (2018); [Lauren Notini](https://onlinelibrary.wiley.com/authored-by/Notini/Lauren) et al., *Drawing the line on in vitro gametogenesis*, 34(1) [Bioethics](https://onlinelibrary.wiley.com/journal/14678519) 123 (2019). [↑](#footnote-ref-51)
52. *See* Smajdor & Newson, *supra* note 43; Suter, *supra* note 49; [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., Disruptive, *supra* note 42. [↑](#footnote-ref-52)
53. In this chapter I won't explore other "traditional" models as the marital presumption that treats the legal parenthood as a derivative of the personal status of the individuals – whether they are married or not. Since it has strong religious roots, and it is much less actual in our brave new world, where LGBT couples enjoy already it as can be understood from the following title: Phillip Lapointe, *Extending the marital presumption to same-sex couples: the effect on parentage for married same-sex male couples using a surrogate*, 22 J. Gender Race & Just. 127 (2019). *See also* J. Herbie DiFonzo & Ruth C. Stem, *Breaking the Mold and Picking Up the Pieces: Rights of Parenthood and Parentage in Nontraditional Families*, 51 Fam. Ct. Rev. 104, 104 (2013); Katharine K. Baker, *The DNA Default and Its Discontents: Establishing Modern Parenthood*, 96 B.U.L. Rev. 2037, 2091 (2016) [(hereinafter: Baker, The DNA](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)) ("Marriage, the main alternative to the DNA default, continues to serve as a path to parenthood for a little more than half of the children in the United States."). Likewise, some of the "modern" models, as the functional parenthood, is out of the scope of our discussion. Since it is much retroactive and not prospective model that is relevant later on in the life of the resulted child and less suitable as normative model before or around the delivery of the child. Nonetheless, I here and there will mention and discuss it briefly. *See* mainly Richard F. Storrow, *Parenthood by Pure Intention: Assisted Reproduction and the Functional Approach to Parentage*, 53 Hastings L. J. 597 (2002); Courtney G. Joslin & Douglas NeJaime, *Multi-Parent Families, Real and Imagined*, 90 Fordham L. Rev. 2561 (2022); Courtney G. Joslin & Douglas NeJaime, *How Parenthood Functions*, 123 Colum. L. Rev. 319 (2023). [↑](#footnote-ref-53)
54. Harry D. Krause, Illegitimacy: Law and Social Policy 69 (1971). *See also* Anthony Miller, *The Case for the Genetic Parent: Stanley, Quilloin, Caban, Lehr, and Michael H. Revisited*, 53 Loy. L. Rev. 395 (2007); Glenn Cohen, *The Right Not to Be a Genetic Parent?* 81 S. Cal. L. Rev. 1115 (2008). [↑](#footnote-ref-54)
55. *See* respectively David M. Schneider, A Critique of the Study of Kinship 165–77 (1984); Dorothy E. Roberts, *The Genetic Tie*, 62 U. Chi. L. Rev. 209 (1995); Nelkin & M. Susan Lindee, The DNA Mystique: The Gene as a Cultural Icon (1995). [↑](#footnote-ref-55)
56. Stumpf, *supra* note 8, at 195 n.30. [↑](#footnote-ref-56)
57. *See* more generally Gary A. Debele, *Custody and Parenting by Persons Other Than Biological Parents: When Non-Traditional Family Law Collides with the Constitution*, 83 N.D. L. Rev. 1227 (2007); Meiraf G. Tesfaye, *What makes a Parent? Challenging the Importance of a Genetic Link for Legal Parenthood in International Surrogacy Arrangements*, 36(1) International Journal of Law, Policy and The Family ebac010 (2022). [↑](#footnote-ref-57)
58. *See* mainly [Michael](https://link.springer.com/article/10.1007/s10790-005-6861-y#auth-Michael_W_-Austin-Aff1) W. Austin, *The failure of biological accounts of parenthood*, 38(4) J Value Inq 499 (2004); [Michael](https://link.springer.com/article/10.1007/s10790-005-6861-y#auth-Michael_W_-Austin-Aff1) W. Austin, Conceptions of Parenthood: Ethics and The Family (2016) passim. *See also* more generally [Harry Willekens](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Harry%20Willekens&eventCode=SE-AU), *What (If Anything) Can Justify The Use of Biological Criteria for Allocating Parental Rights And Obligations?* [Family Matters](https://www.cambridge.org/core/books/family-matters/7375460BFCFCB7F7C656380556CD53EA): Essays in Honour of John Eekelaar 567 ([Jens Scherpe](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Jens%20Scherpe&eventCode=SE-AU) & [Stephen Gilmore](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Stephen%20Gilmore&eventCode=SE-AU) eds., 2023). [↑](#footnote-ref-58)
59. *Cf* Douglas NeJaime, *The Nature of Parenthood*, 126 Yale L.J. 2260 (2017); Lapointe, *supra* note 53; Noy Naaman, *Timing Legal Parenthood*, 75 Ark. L. Rev. 59 (2022). [↑](#footnote-ref-59)
60. *Cf* U.S. Congress, Office of Technology Assessment, Infertility: Medical and Social Choices 282 (1988), in light of the famous Latin dictum *mater est quam gestatio demonstrat* (“motherhood is demonstrated by gestation”); UPA § 3, 9B U.L.A. 287, 298 (1973); Yehezkel Margalit, *Technological Solomonic Dilemmas - Embryo Mix-Up in Israeli and Jewish Perspectives*, in Emerging Technologies – Converging Theologies: Multidisciplinary Considerations for Human Futures (Jessica Giles & [Zachary R. Calo](https://www.google.co.il/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwicldKIrff_AhWVUKQEHcJZDnYQFnoECA8QAQ&url=https%3A%2F%2Fwww.hbku.edu.qa%2Fen%2Fcl%2Fstaff%2Fzachary-r-calo&usg=AOvVaw3_ow7hywCBzptKXoHHeOTo&opi=89978449) eds., forthcoming, 2024). [↑](#footnote-ref-60)
61. *See*, amongst others, Soos v. Superior Court, 897 P.2d 1356, 1360–1 (Ariz. Ct. App. 1994); Anne Schiff Reichman, *Solomonic Decisions in Egg Donation: Unscrambling the Conundrum of Legal Maternity,* 80 Iowa L. Rev. 265 (1995); Yehezkel Margalit, Determining Legal Parentage – Between Family Law and Contract Law 21-2 (2019) [(hereinafter: Margalit, Determining‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-61)
62. *See*, for example, American College of Obstetricians and Gynecologists, Statement of Policy, Ethical Issues in Surrogate Motherhood 56 (1983); Surrogate Motherhood: Politics and Privacy 300-3 (Larry Gostin ed., 1990). [↑](#footnote-ref-62)
63. *Cf* Barbara Katz Rothman, Recreating Motherhood 44, 97–105, 238–9 (1989); John H. Kennell Marshall H. Klaus & Maternal-infant bonding: The Impact of Early Separation or Loss on Family Development 1–15 (1976); Anne Goodwin, *Determination of Legal Parentage in Egg Donation, Embryo Transplantation, and Gestational Surrogacy Arrangements*, 1992 Fam. L.Q. 275 (1992). [↑](#footnote-ref-63)
64. *See* mainly George J. Annas & Sherman Elias, *In Vitro Fertilization and Embryo Transfer: Aspects of a New Technique to Create a Family,* 17 Fam. L.Q. 199, 216–7 (1983); [Hendricks, Essentially](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22), *supra* note 33 and more extensively  Jennifer Hendricks, [Essentially a Mother: A Feminist Approach to the Law of Pregnancy and Motherhood (](https://books.google.com/books?hl=iw&lr=&id=JcCrEAAAQBAJ&oi=fnd&pg=PA1&dq=%22Essentially+a+Mother%22&ots=eCgYx3NGSt&sig=lTpsNKDq6ql1jDjEJfGLuvVZEPc)2023‏). [↑](#footnote-ref-64)
65. For a summary of the various aspects of the gestational influence of the pregnant woman on the fetus, see Hill, *supra* note 8, at 394-400; Scott B. Rae, *Parental Rights and the Definition of Motherhood in Surrogate Motherhood*, 3 S. Cal. Rev. L. & Women’s Stud. 219 (1994). [↑](#footnote-ref-65)
66. *See* Katharine Bartlett, *Re-expressing Parenthood*, 98 Yale L.J. 293, 329–30 (1988); Alta R. Charo,  
    *And Baby Makes Three – or Four, or Five, or Six: Redefining the Family after the Reprotech Revolution*, 15 Wis. Women’s L.J. 231, 249 (2000); Annette R. Appell, *Virtual Mothers and the Meaning of Parenthood*, 34 U. Mich. J.L. Reform 683, 691 (2001). [↑](#footnote-ref-66)
67. *See also* Jeffrey Blustein, Parents and Children: The Ethics of the Family 142 (1982); Note, *Rumpelstiltskin Revisited: The Inalienable Rights of Surrogate Mothers,* 99 Harv. L. Rev. 1936, 1950–1 (1986); Storrow, *supra* note 53, at 616 n.119. [↑](#footnote-ref-67)
68. *See* Ruth L. Fischbach & John D. Loike, *Maternal–Fetal Cell Transfer in Surrogacy: Ties That Bind*, 14(5) The American Journal of Bioethics 35 (2014);[Jenny Gunnarsson Payne](https://www.journals.uchicago.edu/doi/abs/10.1086/684233?journalCode=signs), *Grammars of Kinship: Biological Motherhood and Assisted Reproduction in the Age of Epigenetics*, 41(3) Signs: Journal of Women in Culture and Society 483 (2016);Ludmila A. Gerlinskaya et al., *Phenotypic variations in transferred progeny due to genotype of surrogate mother*, 25(2) Molecular Human Reproduction 88 (2019) [↑](#footnote-ref-68)
69. This was the method in [*Belsito v. Clark*, 644 N.E.2d 760, 763 (1994)](http://www.lexis.com/research/buttonTFLink?_m=17aa58ecad976ae2f738f327df5b4370&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b53%20Hastings%20L.J.%20597%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=750&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b644%20N.E.2d%20760%2cat%20762%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzz-zSkAk&_md5=d7978363e5e94bd0406a2e531e29e697) for distinguishing various previous rulings that had made use with this model. [↑](#footnote-ref-69)
70. Johnson v. Calvert, 5 Cal.4th 84, 94 (Cal. 1993). *See also* Carmel Shalev, Birth Power: The Case for Surrogacy 120–45 (1989); Diane E. Eyer, Mother-Infant Bonding: A Scientific Fiction (1993). [↑](#footnote-ref-70)
71. For an academic discussion of this notion, see, for example, [Anna Smajdor](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=ANNA%20SMAJDOR&eventCode=SE-AU), *The Moral Imperative for Ectogenesis*, 16(3) Cambridge Quarterly of Healthcare Ethics 336 (2007); Yehezkel Margalit & John Loike, *The New Frontier of Advanced Reproductive Technology: Reevaluating Modern Legal Parenthood*, 37 Harvard Journal of Law and Gender 107, 126-7 (2014); LauraPalazzani, *Reproductive technologies and the global bioethics debate: A Philosophical Analysis of the Report on ART and Parenthood of the International Bioethics Committee of Unesco*, 19 (19) [Phenomenology and Mind](https://philpapers.org/asearch.pl?pub=3943) 138 (2020), [Reproductive technologies and the global bioethics debate: A Philosophical Analysis of the Report on ART and Parenthood of the International Bioethics Committee of Unesco (openedition.org)](https://journals.openedition.org/phenomenology/578#tocto1n6). [↑](#footnote-ref-71)
72. *See, e.g.*, the legislative statement that every agreement concerning the custody right of any given parent is unenforceable in light of public policy if it cannot be reconciled with the BIC. *See* Restatement (Second) of Contracts § 191 (1981). [↑](#footnote-ref-72)
73. *See* respectively Martha A. Fineman, The Neutered Mother, the Sexual Family, and other Twentieth Century Tragedies (1995); Barbara B. Woodhouse, *Hatching the Egg: A Child-Centered Perspective on Parents’ Rights*, 14 Cardozo L. Rev. 1747, 1812 (1993). *See also* Gilbert A. Holmes, *The Extended Family System In The Black Community: A Child-Centered Model For Adoption Policy*, 68 TMPLR 1649 (1995). [↑](#footnote-ref-73)
74. Steven N. Peskind, *Determining the Undeterminable: The Best Interest of the Child Standard as an Imperfect but Necessary Guidepost to Determine Child Custody*, 25 N. Ill. U. L. Rev. 449 (2005). *See also* Ilana Hurwitz, *Collaborative Reproduction: Finding the Child in the Maze of Legal Motherhood,* 33Conn. L. Rev. 127, 169–79 (2000); A.C. v. C.B., 829 P.2d 660 (N.M. 1992). [↑](#footnote-ref-74)
75. *See* David L. Chambers, *Rethinking the Substantive Rules for Custody Disputes in Divorce,* 83 Mich. L. Rev. 477, 480-5 (1984); Robert Mnookin, *Child Custody Adjudication: Judicial Functions in the Face of Indeterminacy*, 39 Law & Contemp. Probs. 226, 255-62, 257-61 (1975); Jon Elster, *Solomonic Judgments: Against the Best Interest of the Child*, 54 U. Chi. L. Rev. 1, 16-21(1987). [↑](#footnote-ref-75)
76. *See* Jehnna I. Hanan, *The Best Interest of the Child: Eliminating Discrimination in the Screening of Adoptive Parents*, 27 Golden Gate U. L. Rev. 167 (1997); Susan Beth Jacobs, *The Hidden Gender Bias behind the Best Interest of the Child Standard in Custody Decisions*, 13 Ga. St. U. L. Rev. 845 (1997); Elizabeth S. Scott & Robert E. Emery, *Gender Politics and Child Custody: The Puzzling Persistence of the Best-Interest Standard*, 77 Law & Contemp. Probs. 69 (2014). [↑](#footnote-ref-76)
77. *See* Bradford Wilcox & Robin F. Wilson, *Reforming Parentage Laws: Bringing up Baby: Adoption, Marriage, and the Best Interests of the Child*, 14 Wm. & Mary Bill of Rts. J. 883 (2006); June Carbone, *Which Ties Bind? Redefining the Parent-Child Relationship in an Age of Genetic Certainty*, 11 Wm. & Mary Bill of Rts. J. 1011 (2003); June Carbone, From Partners to Parents: The Second Revolution in Family Law 111-22 (2000). [↑](#footnote-ref-77)
78. *See* Sara McLanahan et al., *Child-Support Enforcement and Child Well-Being: Greater Security or Greater Conflict,* Child Support and Child Well-Being 239, 254 (Irwin Garfinkel et al. eds., 1994); Katharine K. Baker, *Bargaining or Biology? The History and Future of Paternity Law and Parental Status*, 14 Cornell J.L. & Pub. Pol'y 1, 20-1 (2004). [↑](#footnote-ref-78)
79. Leisner, *supra* note 10, at 425; Patricia Byrn & Lisa Giddings, *An Empirical Analysis of the Use of the Intent Test to Determine Parentage in Assisted Reproductive Technology Cases*, [50 Hous. L. Rev. 1295, 1309](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=4d71dd174b442535104d94f0078b7403&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b41%20Wm.%20Mitchell%20L.%20Rev.%20130%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=134&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b50%20Hous.%20L.%20Rev.%201295%2cat%201309%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLbVzt-zSkAl&_md5=c7789fab0722acb0167a9e9fa668f4f2) tbl.1, 1306 (2013); Green, *supra* note 10, at 265-6. [↑](#footnote-ref-79)
80. *Cf* I. Glenn Cohen, *Beyond Best Interests*, 96 Minn. L. Rev. 1187, 1274 (2011–12); I. Glenn Cohen, *Regulating Reproduction: The Problem with Best Interests*, 96 Minn. L. Rev. 423 (2011). *See also* John A. Robertson, Children of Choice: Freedom and the New Reproductive Technologies 30 (1994). [↑](#footnote-ref-80)
81. *See* Real Prendingue, *supra* note 20, at 191. For the suggested implementation of the BIC in ART in the International Bioethics Committee of UNESCO (IBC), see Palazzani, *supra* note 71, at the fifth chapter. [↑](#footnote-ref-81)
82. Raymond C. O'Brien, *The Immediacy of Genome Editing and Mitochondrial Replacement*, 9 Wake Forest J. L. & Pol'y 419, 493 (2019). *See also* Naomi Cahn, *CRISPR Parents and Informed Consent*, 23 SMU Science & Technology Law Review 3 (2020) passim. [↑](#footnote-ref-82)
83. Marjorie M. Shultz, *Reproductive Technology and the Intent-Based Parenthood: An Opportunity for Gender Neutrali*ty, 1990 Wis. L. Rev. 297 (1990). It should be emphsized that in the past 34 years since it was published it has been qouted over and over again in at least 600 academic publications. For a fuller description of her influental research, see Melanie B. Jacobs*, Parental Parity: Intentional Parenthood’s Promise*, 64 Buff. L. Rev. 465, 467-81 (2016) [(hereinafter: ‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)Jacobs*,* Parental); Margalit, Determining‏, *supra* note 61, at 91-2.  [↑](#footnote-ref-83)
84. *See* Byrn & Holzer, *supra* note 8, at 113-4. *See also* Byrn & Giddings, *supra* note 79, at 1318. [↑](#footnote-ref-84)
85. *See* the fascinating numbers of artificially conceived children, whom can be brought into the world only following DLPBA, such as a sperm/ova donation and/or surrogacy agreement, etc., mentioned and discussed at Martha M. Ertman, Love's Promises: How Formal and Informal Contracts Shape All Kinds of Families xix (2016) [(hereinafter: Ertman, Love's](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-85)
86. Douglas NeJaime, *Marriage Equality and the New Parenthood*, 129 Harv. L. Rev. 1185 (2016) [(hereinafter: NeJaime, Marriage](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-86)
87. [Obergefell v. Hodges, 135 S. Ct. 2584 (2015).](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=ba3229b73ff7d7a5c7dd7143489f79b7&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b129%20Harv.%20L.%20Rev.%201185%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=763&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b135%20S.%20Ct.%202584%2cat%202599%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLbVzB-zSkAb&_md5=b2be7126520ca36403f2389695497cb2) For the previous Supreme Court rulings in this innovative vein, see United States v. Windsor, 133 S. Ct. 2675 (2013); [Hollingsworth v. Perry, 133 S. Ct. 2652 (2013).](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=ba3229b73ff7d7a5c7dd7143489f79b7&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b129%20Harv.%20L.%20Rev.%201185%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=751&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b133%20S.%20Ct.%202652%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLbVzB-zSkAb&_md5=ef51d0727e831ab02f0223da913d60a1) [↑](#footnote-ref-87)
88. For the seminal additional articles, besides those mentioned above in *supra* note 53, endorsing this parentage determination, see [Katharine T. Bartlett, Re*thinking Parenthood as an Exclusive Status: The Need for Legal Alternatives when the Premise of The Nuclear Family has Failed*, 70 Va. L. Rev. 879 (1984](http://find.galegroup.com/itx/retrieve.do?subjectParam=Locale%2528en%252C%252C%2529%253AFQE%253D%2528su%252CNone%252C21%2529rethinking%2Bparenthood%2524&contentSet=IAC-Documents&sort=DateDescend&tabID=T002&sgCurrentPosition=0&subjectAction=DISPLAY_SUBJECTS&prodId=LT&searchId=R16&currentPosition=1&userGroupName=barilan&resultListType=RESULT_LIST&sgHitCountType=None&qrySerId=Locale(en%2C%2C)%3AFQE%3D(KE%2CNone%2C21)rethinking+parenthood$&inPS=true&searchType=BasicSearchForm&displaySubject=&docId=A3295851&docType=IAC)); Nancy D. Polikoff, *This Child does Have Two Mothers: Redefining Parenthood to Meet the Needs of Children in Lesbian-Mother and Other Nontraditional Families,* 78 Geo. L.J. 459 (1990) [(hereinafter: Polikoff,](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22) This); Note, *Looking for a Family Resemblance: The Limits of the Functional Approach to the Legal Definition of Family*, 104 Harv. L. Rev. 1640 (1991). [↑](#footnote-ref-88)
89. NeJaime, Marriage, *supra* note 86, at 1190-1. For academic discussions of this quotation, see Libby Adler, *Inconceivable: Status, Contract, and the Search for a Legal Basis for Gay & Lesbian Parenthood*, 123 Penn St. L. Rev. 1, 20 (2018); Courtney G. Joslin, *Nurturing Parenthood Through the UPA (2017)*, 127 Yale L.J. F. 589, 612 n.123 (2018). [↑](#footnote-ref-89)
90. Amongst the hundreds of legal articles that have been written on Obergefell v. Hodges, one can find many heated discussions of the nexus of equality both in marriage and ART in the post-Obergefell era. *See*, for example, Michael Boucai, [*Is Assisted Procreation an LGBT Right?*](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_session=9e3c1350-2d6a-11e7-8dff-8b446788c051.1.1.154690.+.1.0&wchp=dGLzVzt-zSkAA&_b=0_2182535767&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c!%5BCDATA%5B2016%20Wis.%20L.%20Rev.%201065%5D%5D%3e%3c%2fcite%3e&_lexsee=SHMID&_lnlni=&_butType=3&_butStat=254&_butNum=2&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c!%5BCDATA%5B2016%20Wis.%20L.%20Rev.%201065%5D%5D%3e%3c%2fcite%3e&prevCase=ARTICLE%3A%20IS%20ASSISTED%20PROCREATION%20AN%20LGBT%20RIGHT%3F&prevCite=2016%20Wis.%20L.%20Rev.%201065&_md5=C0A10573474BF20494E3D15147CB989E), 2016 Wis. L. Rev. 1065 (2016); Courtney Megan Cahill, *Reproduction Reconceived*, 101 Minn. L. Rev. 617 (2016); Seema Mohapatra, *Changing American State and Federal Childcare Laws: Assisted Reproduction Inequality and Marriage Equality*, 92 Chi.-Kent L. Rev. 87 (2017). [↑](#footnote-ref-90)
91. *See* In re Baby M, 537 A.2d 1227, 1264 (N.J. 1988). This seminal ruling has been discussed in dozens of verdicts and in hundreds of academic articles, what brightly reflect how much it is central for our discussion. *See*, amongst others, Anita L. Allen, *Privacy, Surrogacy, and the Baby M Case*, 76 Geo. L.J. 1759 (1988); Carol Sanger, *Developing Markets in Baby-Making: In the Matter of Baby M*, 30 Harv. J.L. & Gender 67 (2007); Elizabeth S. Scott, *Surrogacy and the Politics of Commodification*, 72 Law & Contemp. Probs. 109 (2009). [↑](#footnote-ref-91)
92. *Id.* For further discussion of this issue, see mainly Margalit & Loike, *supra* note 71, at 115-6. [↑](#footnote-ref-92)
93. *See* Johnson v. Calvert, *supra* note 70, at 782. For an academic discussion of this ground break statement, see Gillian Douglas, *The Intention to Be a Parent and the Making of Mothers*, 57(4) The Modern Law Review 636, 637 (1994); Melanie B. Jacobs, *Applying Intent-Based Parentage Principles to Nonlegal Lesbian Coparents*, 25 N. Ill. U. L. Rev. 433, 439 (2005) [(hereinafter: Jacobs, Applying](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)); Carla Spivack, *The Law of Surrogate Motherhood in the United States*, 58, Issue suppl\_1 The American Journal of Comparative Law 97, 103 (2010). [↑](#footnote-ref-93)
94. *See* In re Marriage of Buzzanca, 72 Cal. Rptr. 2d 280, 293 (Cal. Ct. App. 1998); *see also* In re Nicholas H., 46 P.3d 932, 941 (Cal. 2002) (holding that a man who meets the statutory criteria for a presumed father can be considered the legal parent even if he has no biological relationship to a child). [↑](#footnote-ref-94)
95. *See* Dara E. Purvis, *Intended Parents and the Problem of Perspective*, 24 Yale J. L. & Feminism 210 (2012) [(hereinafter: Purvis, Intended](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)); ibid, *The Origin of Parental Rights: Labor, Intent, and Fathers*, 41 Fla. St. U.L. Rev. 645 (2014); ibid, *The Constitutionalization of Fatherhood*, 69 Case W. Res. L. Rev. 541 (2019) passim. [↑](#footnote-ref-95)
96. *See* Martha M. Ertman, *AALS Section on Contracts: New Frontiers in Private Ordering: Mapping the New Frontiers of Private Ordering: Afterword*, 49 Ariz. L. Rev. 695, 700 (2007) [(hereinafter: Ertman, New](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)) and more extensively Ertman, Love's, *supra* note 85. [↑](#footnote-ref-96)
97. *See* Jacobs, Applying, *supra* note 93; Melanie B. Jacobs, *Intentional Parenthood's Influence: Rethinking Procreative Autonomy and Federal Paternity Establishment Policy*, 20 Am. U.J. Gender Soc. Pol'y , &, L. 489 (2011–2012) [(hereinafter: Jacobs, Intentional](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)); Jacobs, Parental, *supra* note 83. [↑](#footnote-ref-97)
98. *See* mainly Marsha Garrison, *The Technological Family: What's New and What's Not*, 33 Fam. L.Q. 691, 692–701 (1999); Marsha Garrison, *Law Making for Baby Making: An Interpretive Approach to the Determination of Legal Parentage*, 113 Harv. L. Rev. 835, 842 (2000). [↑](#footnote-ref-98)
99. Yehezkel Margalit, Determining Legal Parentage by Agreement unpublished Thesis (Faculty of Law, Bar-Ilan University, 2011) (Heb.); ibid, Bridging the Gap, *supra* note 9, at 42-6. *See also* Jacobs, Parental, *supra* note 83, at469. [↑](#footnote-ref-99)
100. Margalit, Bridging, *supra* note 9, at 45. *See also* Jeffrey A. Parness, *The Constitutional Limits on Custodial and Support Parentage by Consent*, 56 Idaho L. Rev. 421, 502 (2020) ("Parentage by consent is quickly expanding across U.S. states, with no sign of letup. All three UPAs and recent ALI pronouncements recognize childcare parentage forms that are dependent upon neither (real or presumed) biological ties nor formal adoptions. Increasingly, there are new forms of parentage by consent for children born of sex and for children born of assisted reproduction."). But compare [Baker, The DNA](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22), *supra* note 53, at 2054 ("Preconception intent almost always governs the parentage question for children conceived noncoitally, but never governs for children conceived through intercourse."). [↑](#footnote-ref-100)
101. *See* Quebec Civ. Code, S.Q., Art. 538 (2002), http://legisquebec.gouv.qc.ca/en/showversion/cs/CCQ-1991?code=se:538\_2&pointInTime=20161020; *see also* Nancy D. Polikoff, *A Mother Should Not Have to Adopt Her Own Child: Parentage Laws for Children of Lesbian Couples in the Twenty-first Century*, [5 Stan. J. C.R. & C.L. 201, 227-32 (2009) [(hereinafter: Polikoff, A Mother](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)).](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=10ffdb7785abf5c9467a940c03a30b2a&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b18%20Cardozo%20J.L.%20%26%20Gender%20355%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=360&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b5%20Stan.%20J.C.R.%20%26%20C.L.%20201%2cat%20227%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=dc5e620e8e8ed33dca10d398b05b4577) [↑](#footnote-ref-101)
102. *See* Quebec Civ. Code, ibid (intending to recognize the parenthood of single sex couples and allow them to be legitimate parents to their children); *see also* Fiona Kelly, *Reforming Parenthood: The Assignment of Legal Parentage Within Planned Lesbian Families*, [40 Ottawa L. Rev. 185, 193-4](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=10ffdb7785abf5c9467a940c03a30b2a&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b18%20Cardozo%20J.L.%20%26%20Gender%20355%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=361&_butInline=1&_butinfo=%3ccite%20cc%3d%22CAN%22%3e%3c%21%5bCDATA%5b40%20Ottawa%20L.%20Rev.%20185%2cat%20193%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=91d133e1f06212499b2d503a5036d658) (2008-2009). [↑](#footnote-ref-102)
103. *See* Quebec Civ. Code, *supra* note 101 (ruling that both a couple and an individual can agree to the annulment of the legal parenthood of the male, if the agreement is in accordance with the legal conditions). For a discussion on the Quebec's Amendments, see Angela Campbell, *Conceiving Parents Through Law*, 21 Int'l J.L. Pol'y & Fam. 242, 254-5 (2007); Robert Leckey, *'Where the Parents are of the Same Sex': Quebec's Reforms to Filiation*, 23 Int'l J.L. Pol'y & Fam. 62, 65-9 (2009); Polikoff, A Mother, *supra* note 101, at 226-9. [↑](#footnote-ref-103)
104. For this significantly revolutionary act, see, amongst others, Haim Abraham, *A Family Is What You Make It: Legal Recognition and Regulation of Multiple Parents*, 25 Am. U. J. Gender Soc. Pol’y & L. 405, 443 n.143 (2017); Brenda Cossman & Bruce Ryder, *Beyond beyond Conjugality*, 30 Can. J. Fam. L. 227, 249 n.59 (2017); Natasha Bakht & Lynda M. Collins, *Are You My Mother: Parentage in a Nonconjugal Family*, 31 Can. J. Fam. L. 105, 130–9 (2018). [↑](#footnote-ref-104)
105. All Families Are Equal Act (Parentage and Related Registrations Statute Law Amendment), 2016, S.O. 2016, c. 23 s.1(1); M.R.R. v. J.M., 2017 ONSC 2655; Robert Leckey, *One Parent, Three Parents: Judges and Ontario’s All Families Are Equal Act, 2016,*33 Int’l J.L. Pol’y & Fam. 298 (2019). [↑](#footnote-ref-105)
106. For the first articles and book to discuss it, see respectively Albertina Antognini & Susan Frelich Appleton, *Sexual Agreements*, 99 Wash. U. L. Rev. 1807, 1834-5 (2022); Tatjana Tertsch, Reformbedarf im internationalen Abstammungsrecht 26 (2023); Yehezkel Margalit, Determining Legal Parentage by Agreement in Israel 118-9 (2023) (Heb.). [↑](#footnote-ref-106)
107. Australian Federal Family Law Act 1975 Sec. 60H. For academic articles discussing it, see Adiva Sifris, *Dismantling Discriminatory Barriers: Access to Assisted Reproductive Services for Single Women and Lesbian Couples*, 30 Monash U. L. REV. 229, 245–62 (2004); Lyria Bennett Moses, *Understanding Legal Responses to Technological Change: The Example of In Vitro Fertilization*, 6 Minn. J.L. Sci. & Tech. 505, 550 (2005); Jenni Millbank, *De facto Relationships, Same-Sex and Surrogate Parents: Exploring the Scope and Effects of the 2008 Federal Relationship Reforms*, 23 Australian Journal of Family Law 160 (2009). For a similar but less radical Californian statue articulating that a known sperm donor may agree upon exempting him from his parental obligations by written agreement, see [CA Fam Code § 7613 (2018)](https://law.justia.com/citations.html). Discussed by Kolinsky, *supra* note 8, at 820-4; NeJaime, Marriage, *supra* note 86, at 1261–2; Jeffrey A. Parness, *Unnatural Voluntary Parentage Acknowledgments under the 2017 Uniform Parentage Act*, 50 U. Tol. L. Rev. 25, 33 (2018). [↑](#footnote-ref-107)
108. That should be the appropriate answer to these scholars contending that there is a dramatic inconsistency between how legal parentage is determined in the ART context compared with the traditional parentage context, see [Jacobs, Intentional](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22), *supra* note 97, at 494; Courtney G. Joslin*, Protecting Children(?): Marriage, Gender, and Assisted Reproductive Technology*, 83 S. Cal. L. Rev. 1177 (2009–2010). [↑](#footnote-ref-108)
109. Michael J. Higdon, *Constitutional Parenthood*, 103 Iowa L. Rev. 1483, 1541 (2018), was quoted by Parness, The, *supra* note 100, at 424 n.7. [↑](#footnote-ref-109)
110. As a paraphrase on the following article title: Naomi Cahn & Sonia M. Suter, *The Art of Regulating ART*, 96 Chi.-Kent L. Rev. 29 (2021). *See* id, at 8 ("As reproductive technologies advance in new directions, the regulatory structure has not yet developed to respond fully and appropriately."). [↑](#footnote-ref-110)
111. *Cf* Charles P Kindregan, Jr. & Maureen Mcbrien, Assisted Reproductive Technology: A Lawyer's Guide to Emerging Law and Science 31-3 (2d ed., 2011); Raftopol v. Ramey, 12 A.3d 783, 785 (Conn. 2011) ([…] our laws, and the laws of most other states, have struggled unsuccessfully to keep pace with the complex legal issues that continue to arise as a result of the technology."), was quoted by DiFonzo & Stem, *supra* note 53, at 112. [↑](#footnote-ref-111)
112. As Jacobs, Parental, *supra* note 83, at 484, 497 (2016); Margalit, Determining, *supra* note 61, passim;

     Shultz, *supra* note 83, at 292–3. [↑](#footnote-ref-112)
113. *See* respectively Leisner, *supra* note 10, at 434 and compare ibid, at 417 ("This Note argues that MRT is analogous to other forms of gamete donation, and that because parentage disputes in the context of gamete donation are commonly resolved using the intent test, parentage disputes in the context of MRT should be resolved using the intent test as well."); Marco Rizzuti, *Parenthood and genetic manipulation* 3(2) Católica Law Review 65, 71 (2019). [↑](#footnote-ref-113)
114. For this notion in the context of mitochondria, see mainly [Paul Brodwin](https://www.taylorfrancis.com/search?contributorName=Paul%20Brodwin&contributorRole=author&redirectFromPDP=true&context=ubx), *Genetics*, *Identity and the Anthropology of Essentialism*, ['Mixed Race' Studies](https://www.taylorfrancis.com/books/mono/10.4324/9780203643617/mixed-race-studies?refId=5ac86760-e46a-4b0a-b57d-f03cc9e77f83&context=ubx): A Reader 116 ([Jayne O. Ifekwunigwe](https://www.taylorfrancis.com/search?contributorName=Jayne%20O.%20Ifekwunigwe&contributorRole=editor&redirectFromPDP=true&context=ubx) ed., 2004); Jennifer S. Hendricks, *Genetic Essentialism in Family Law*, 26 Health Matrix 109 (2016); [Benjamin](https://www.cambridge.org/core/search?filters%5BauthorTerms%5D=Benjamin%20Gregg&eventCode=SE-AU) Gregg, *Regulating genetic engineering guided by human dignity, not genetic essentialism*, 41(1) Politics and the Life Sciences 60 (2022). [↑](#footnote-ref-114)
115. Green, *supra* note 10, at 253. [↑](#footnote-ref-115)
116. Margalit, Determining, *supra* note 61, at 186. *See also* Browne C. Lewis, Papa's Baby: Paternity and Artificial Insemination 186-87, 210-11, 213 (2012); Yehezkel Margalit, *Artificial Insemination from Donor (AID) – From Status to Contract and Back Again?*, 21 B.U. J. Sci. & Tech. L. 69, 96-7 (2015) [(hereinafter: ‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)Margalit, Artificial). [↑](#footnote-ref-116)
117. Leisner, *supra* note 10, at 430-1. Maybe even Lynda Wray Black agreed in the end of her article that the finishing and not the starting point should prefer intentional over genetic parenthood as may be understood from the following conclusion: "The modern definition of parentage has arisen within a legal framework that embraces distinct tests of maternity and paternity […] resorts to intent-based constructive tests of parentage that can trump a biological parent's role […].", Lynda Wray Black, *The Birth of a Parent: Defining Parentage for Lenders of Genetic Material*, 92 Neb. L. Rev. 799, 841 (2014). [↑](#footnote-ref-117)
118. For this unique dual mitochondrial and nuclear legal motherhood, see Margalit & Loike, *supra* note 71, passim; Courtney Megan Cahill, *The New Maternity*, 133 Harv. L. Rev. 2221 (2020); Katherine M. Johnson‏, Undoing Motherhood: Collaborative Reproduction and the[Deinstitutionalization of US Maternity (2023)‏](https://books.google.com/books?hl=iw&lr=&id=FGivEAAAQBAJ&oi=fnd&pg=PT8&dq=%22dual+maternity%22+mitochondria&ots=18Z1BKwGOG&sig=AgZ7_i-r91ASL0cn9yovRQT2B3c). [↑](#footnote-ref-118)
119. Green, *supra* note 10, at 260. [↑](#footnote-ref-119)
120. Michal Pruski, *The Relationship of Gametes to Those Who Procreate and Its Impact on Artificially Generated Gamete Technologies*, 33(1) [Ethics and Medicine](https://philpapers.org/asearch.pl?pub=2433) 27, 36 (2017). *See also* [Inmaculada Moreno](https://pubmed.ncbi.nlm.nih.gov/?term=Moreno%20I%5BAuthor%5D) et al., *Artificial gametes from stem cells*, 42(2) [Clin Exp Reprod Med.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4496429/) 33 (2015) ("However, the great promise of artificial gametes resides in their future application on reproductive treatments for all these people wishing to have genetically related children and for which gamete donation is now their unique option of parenthood. This is the case of infertile patients devoid of suitable gametes, same sex couples, singles and those fertile couples […] ".). For an extensive discussion of the reproductive freedom in the context of artificial gametes, see [Seppe Segers](https://pubmed.ncbi.nlm.nih.gov/?term=Segers+S&cauthor_id=28091967) et al., *Balancing Ethical Pros and Cons of Stem Cell Derived Gametes*, 45 Reproductive Tissue Engineering 162 (2017). [↑](#footnote-ref-120)
121. *See* mainly Anna Smajdor & Cutas D, *Artificial gametes and the ethics of unwitting parenthood*, 40(11) Journal of Medical Ethics 748 (2014); Christopher Kaczor, *Philosophy and Theology: Artificial Gametes*, 15(1) National Catholic Bioethics Quarterly 169, 171-2 (2015); Guido Pennings, *Why we need stem-cell derived gametes*, 47(5) [Reproductive BioMedicine Online](https://www.sciencedirect.com/journal/reproductive-biomedicine-online) (2023). [↑](#footnote-ref-121)
122. As Ellen Waldman, *The Parent Trap: Uncovering the Myth of "Coerced Parenthood" in Frozen Embryo Disputes*, [53 Am. U.L. Rev. 1021 (2004)](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=10ffdb7785abf5c9467a940c03a30b2a&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b18%20Cardozo%20J.L.%20%26%20Gender%20355%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=278&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b53%20Am.%20U.L.%20Rev.%201021%2cat%201025%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=a0cf9c1f7b7854f58267cd2f4f6c0371). *See also* Christopher Bruno, *A Right to Decide Not to Be a Legal Father: Gonzales v. Carhart and the Acceptance of Emotional Harm as a Constitutionally Protected Interest*, 77 Geo. Wash. L. Rev. 141 (2008); Cohen, *supra* note 54. [↑](#footnote-ref-122)
123. As Melanie B. Jacobs, *When Daddy Doesn't Want to Be Daddy Anymore: An Argument Against Paternity Fraud Claims*, 16 Yale J.L. & Feminism 193 (2004); Ronald K. Henry, *The Innocent Third Party: Victims of Paternity Fraud*, 40 Fam. L.Q. 51 (2006); Heather Draper, *Paternity fraud and compensation for misattributed paternity*, 33 Journal of Medical Ethics 475 (2007). [↑](#footnote-ref-123)
124. UPA § 707 (2000) (amended 2002). [↑](#footnote-ref-124)
125. *Id*. For previous similar conclusions regarding the misuse of frozen embryo against the will of the other spouse, what should preclude them from the legal parenthood, see Yehezkel Margalit, *To Be or Not to Be (A Parent)? - Not Precisely the Question; the Frozen Embryo Dispute*, [18 Cardozo J.L. & Gender 355 (2012)](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=d105f37ba5157e97b598a3d4a6aaaef1&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b21%20B.U.%20J.%20SCI.%20%26%20TECH.%20L.%2069%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=386&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b18%20Cardozo%20J.L.%20%26%20Gender%20355%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=603834da58e2765443c0bc3b627f8384) [(hereinafter: Margalit, To Be‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)); Margalit, Determining, *supra* note 61, at 244; Yehezkel Margalit*, From (Moral) Status (Of the Frozen Embryo) To (Relational) Contract and Back Again to (Relational Moral) Status,* 20 Indiana Health Law Review 257 (2023) [(hereinafter: Margalit, From‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)). [↑](#footnote-ref-125)
126. Knaplund, *supra* note 7, at 1386. [↑](#footnote-ref-126)
127. [Cohen](https://www.science.org/doi/abs/10.1126/scitranslmed.aag2959#con1) et al., Disruptive, *supra* note 42. [↑](#footnote-ref-127)
128. Rizzuti, *supra* note 113, at 71; the abstract of the following lecture: Marco Rizzuti, *Gene editing and private law* (2022), [Gatt&Co (eds.). Cyborg int + cop\_2023.pdf (unifi.it)](https://flore.unifi.it/bitstream/2158/1310359/1/Gatt%26Co%20%28eds.%29.%20Cyborg%20int%20%2B%20cop_2023.pdf) and compare with Smajdor & Newson, *supra* note 43; Gooßens, *supra* note 44. [↑](#footnote-ref-128)
129. Charles P. Kindregan, Jr. & Maureen McBrien, Assisted Reproductive Technology: A Lawyer’s Guide to Emerging Law and Science 6-7 (2006) (“Parents, whether they are in a married or unmarried union with another, whether they are a single parent, whether they procreate by sexual intercourse or by assisted reproductive technology, are entitled to the respect the law gives to family choice.”); Knaplund, *supra* note 7, at 1380-1, citing the previous version of SECTION 2-120(c), (h)(1), (f)(1), (f)(2)(A) of the UPC. But today we have to add to the equation also SECTION 7, 8 of the revised UPA (2017). [↑](#footnote-ref-129)
130. For a similar conclusion, see Knaplund, *supra* note 7, at 1381-2, citing the previous version of SECTION 2-120(d), (i), (j) of the UPC. [↑](#footnote-ref-130)
131. *See* Knaplund, *supra* note 7, at 1382, citing the previous version of SECTION 2-121(c) of the UPC. [↑](#footnote-ref-131)
132. For the fragmentation of the various components of the legal parenthood in ART, especially the motherhood, what is even more complicated in our at hand scenarios, see van Wichelen & Marc de Leeuw, *supra* note 32; Donald C. Hubin, *Daddy Dilemmas: Untangling the Puzzles of Paternity*, 13 Cornell J. L. & Pub. Pol'y 29, 71 n.199 (2003) ("Recombinant DNA technologies could result in a child having genetic material from multiple men and women […] In such cases, even the concept of a genetic father will be fragmented."). *See also* Cahn & Suter, *supra* note 110, at 86 ("As reproductive technologies advance in new directions, the regulatory structure has not yet developed to respond fully and appropriately. The current sources of regulation are fragmented[…]"). [↑](#footnote-ref-132)
133. For a general survey of the right of the contracting parties to regret the first agreement, see Allan E. Farnsworth, Changing Your Mind: The Law of Regretted Decisions (1998). For a call to enforce ART contracts even in the case of change of heart, see John A. Robertson, *Prior Agreements for Disposition of Frozen Embryos*, [51 Ohio St. L.J. 407, 413-4 (1990).](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=30c1dc86137fdd85a501e71d2257501f&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b20%20Wm.%20%26%20Mary%20J.%20of%20Women%20%26%20L.%20423%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=268&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b51%20Ohio%20St.%20L.J.%20407%2cat%20411%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=9abda29f001e0d44d49edb0853f9d754) [↑](#footnote-ref-133)
134. For a fuller discussion of this point, see Margalit, Bridging, *supra* note 9, at 29-30; Margalit, Artificial, *supra* note 116, at passim; Margalit, Determining, *supra* note 61, at 8, 35, 36, 173, 182. [↑](#footnote-ref-134)
135. For a previous academic calls to demand written agreement as mandatory prerequisite for any ART, see Margalit, To Be, *supra* note 125, at 386-8; Yehezkel Margalit, *In Defense of Surrogacy Agreements: A Modern Contract Law Perspective*, 20 Wm. & Mary J. Woman & L. 423, 466 (2014) [(hereinafter: Margalit, In Defense‏](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22)); Margalit, From, *supra* note 125, at 297, 299. [↑](#footnote-ref-135)
136. *See*, amongst others, Storrow, *supra* note 53 (arguing that in the context of ART, parental status should be assigned by written agreement to the intentional parents); Linda D. Elrod, *A Child's Perspective of Defining a Parent: The Case for Intended Parenthood*, [25 BYU J. Pub. L. 245 (2011)](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=899253b4dbe99e9a37bbf106013e03fb&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b12%20Whittier%20J.%20Child%20%26%20Fam.%20Advoc.%2039%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=207&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b25%20BYU%20J.%20Pub.%20L.%20245%2cat%20266%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLbVzB-zSkAA&_md5=beb1133c2ccffb94b2acc5c76233e924) passim; Elizabeth E. McDonald, *Sperm Donor or Thwarted Father? How Written Agreement Statutes are Changing the Way Courts Resolve Legal Parentage Issues in Assisted Reproduction Cases*, [47 Fam. Ct. Rev. 340 (2009)](https://index.ono.ac.il/f5-w-68747470733a2f2f7777772e6c657869732e636f6d$$/research/buttonTFLink?_m=d105f37ba5157e97b598a3d4a6aaaef1&_xfercite=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b21%20B.U.%20J.%20SCI.%20%26%20TECH.%20L.%2069%5d%5d%3e%3c%2fcite%3e&_butType=3&_butStat=2&_butNum=388&_butInline=1&_butinfo=%3ccite%20cc%3d%22USA%22%3e%3c%21%5bCDATA%5b47%20Fam.%20Ct.%20Rev.%20340%5d%5d%3e%3c%2fcite%3e&_fmtstr=FULL&docnum=1&_startdoc=1&wchp=dGLzVzk-zSkAA&_md5=79fa59f791d4e1d476350092d0887b04). [↑](#footnote-ref-136)
137. Leisner, *supra* note 10, at 427. *See also* Purvis, Intended, *supra* note 95, at 252 ("Empowering courts to look to written intent will improve parentage determinations in four ways."). [↑](#footnote-ref-137)
138. The full version of it, updated to 8.31.2023, can be found here: <https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=175deaae-c229-5c25-606c-edd60c0ca239&forceDialog=1>;[Probate Code (2019) - Uniform Law Commission (uniformlaws.org)](https://www.uniformlaws.org/committees/community-home/librarydocuments?attachments=&communitykey=35a4e3e3-de91-4527-aeec-26b1fc41b1c3&defaultview=&libraryentry=fa4a0f23-e2e8-4bb2-8314-00227c646a81&libraryfolderkey=&pageindex=0&pagesize=12&search=&sort=most_recent&viewtype=row). For a trace after the enacting process of it see here: [Probate Code (2019) - Uniform Law Commission (uniformlaws.org)](https://www.uniformlaws.org/committees/community-home?communitykey=35a4e3e3-de91-4527-aeec-26b1fc41b1c3). [↑](#footnote-ref-138)
139. The full version of it, updated to 3.1.2019, and a trace after the enacting process of it can be found here: [Parentage Act - Uniform Law Commission (uniformlaws.org)](https://www.uniformlaws.org/committees/community-home/librarydocuments?attachments=&communitykey=c4f37d2d-4d20-4be0-8256-22dd73af068f&defaultview=&libraryentry=e5421930-fcd8-4ba1-91ce-6a8e0db0f50d&libraryfolderkey=&pageindex=0&pagesize=12&search=&sort=most_recent&viewtype=row). [↑](#footnote-ref-139)
140. For an academic discussion of this article, see Mary Louise Fellows & Thomas P. Gallanis, *The Uniform Probate Code's New Intestacy and Class Gift Provisions*, 46 ACTEC L.J. 127, 167-8 (2021). [↑](#footnote-ref-140)
141. Courtney G. Joslin, *Preface to the UPA (2017)*, 52 Fam. L.Q. 437 (2018); Elizabeth Watkins, *Who's Your Daddy?: In Vitro-Fertilization and the Parental Rights of the Sperm Donor*, 30 U. Fla. J.L. & Pub. Pol'y 131, 140 (2019); Beth S. Dixon, *For the Sake of the Child: Parental Recognition in the Age of Assisted Reproductive Technology: A Framework for North Carolina,* 43 Campbell L. Rev. 21, 39 (2021)*. See also* UPA SECTION 708 b(1)(B) - "the individual’s intent to be a parent of a child conceived by assisted reproduction after the individual’s death is established by clear-and-convincing evidence;" and compare with SECTION 609d; SECTION 614e(2); SECTION 615a(5); SECTION 704(b)(2). [↑](#footnote-ref-141)
142. For the problem of change of heart as one of the main pitfalls of DLPBA, see Margalit, In Defense, *supra* note 135, at 433-6; Margalit, Determining, *supra* note 61, at 49-52; Margalit, From, *supra* note 125, at 292-3, 297, 300. [↑](#footnote-ref-142)
143. For this unique privilege of the court, see mainly Robert A. Hillman, *Court Adjustment of Long-Term Contracts: An Analysis under Modern Contract Law*, 1987 Duke L.J. 1 (1987); Robert A. Hillman, *Maybe Dick Speidel Was Right about Court Adjustment*, 46 San Diego L. Rev. 595 (2009); Rodrigo Momberg Uribe, *CHANGE OF CIRCUMSTANCES IN INTERNATIONAL INSTRUMENTS OF CONTRACT LAW. THE APPROACH OF THE CISG, PICC, PECL AND DCFR*, 15(2) European Review of Private Law 233 (2011), [Momberg\_15\_VJ\_2011\_233.pdf (cisg-online.org)](https://cisg-online.org/files/commentFiles/Momberg_15_VJ_2011_233.pdf). [↑](#footnote-ref-143)
144. For a similar call, see Anne Schiff Reichman, *Frustrated Intentions and Binding Biology: Seeking AID in the Law*, 44 Duke L.J. 524, 551-69 (1994); Schiff Reichman, *supra* note 61. For a summary of this proposal, see Helene S. Shapo, *Matters of Life and Death: Inheritance Consequences of Reproductive Technologies*, 25 Hofstra L. Rev. 1091, 1186-7 (1997). *See also* Susan Frelich Appleton, *Presuming Women: Revisiting the Presumption of Legitimacy in the Same-Sex Couples Era*, 86 B.U. L. Rev. 227. 289-90 (2006). [↑](#footnote-ref-144)
145. For this general recognition see the reference brought in *supra* note 35. *See also* [Polikoff,](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22) This, *supra* note 88; Ryiah Lilith, *The G.I.F.T. of Two Biological and Legal Mothers*, 9 Am. U.J. Gender Soc. Pol'y & L. 207 (2001); NeJaime, Marriage, *supra* note 86, at 1223-5. [↑](#footnote-ref-145)
146. For the legal recognition of it in British Columbia, see Family Law Act, SBC 2011,c 25, s30, <https://www.canlii.org/en/bc/laws/stat/sbc-2011-c-25/latest/sbc-2011-c-25.html>. For an academic discussion of the latter statue as well as the general recognition of three legal parents, see respectively Jeffrey A. Parness, *Choosing among Imprecise American State Parentage Laws*, 76 La. L. Rev. 481, 491 n. 63 (2015); Jeffrey A. Parness, *Federal Constitutional Childcare Parents*, 90 St. John's L. Rev. 965 (2016). [↑](#footnote-ref-146)
147. For the latter terming, see Paula Amato & Mary Casey Jacob, *Providing fertility services to lesbian couples: the lesbian baby boom*, 2(2) [Sexuality, Reproduction and Menopause](https://www.sciencedirect.com/journal/sexuality-reproduction-and-menopause) 83 (2004); [Daniela Diego](https://link.springer.com/article/10.1007/s10815-022-02616-8#auth-Daniela-Diego-Aff1) et al., *Donor sperm recipients: fertility treatments, trends, and pregnancy outcomes*, 39 J Assist Reprod Genet 2303 (2022); Cahill, *supra* note 118. [↑](#footnote-ref-147)
148. For the notion of egg sharing, see, e.g., Elizabeth F.S. Roberts, *The Traffic Between Women: Female Alliance and Familial Egg Donation in Ecuador*, in Assisting Reproduction, Testing Genes: Global Encounters With New Biotechnologies 113 (Daphna Birenbaum-Carmeli & Marcia C. Inhorn eds., 2009); Joseph Gregorio, *Hatching a Plan Towards Comprehensive Regulations in Egg Donation*, 65 DePaul L. Rev. 1283 (2017); Margalit, Determining, *supra* note 61, passim. [↑](#footnote-ref-148)
149. *See* Cahill, *supra* note 118, at 2226 ("Since then, state courts have increasingly recognized legal parentage claims made by two women - even in the absence of biological connection - as a matter of state parentage law, state and federal constitutional law, or both."). *See*, for example, the following two cases in California: Elisa B. v. Superior Court, 37 Cal.4th 108 (Cal. 2005); Kristine H. v. Lisa R., 117 P.3d 690 (2005). *See also* St. Mary v. Damon, 309 P.3d 1027 (Nev. 2013). For establishing dual maternity even in the absence of genetic maternity, see Wendy G-M. v. Erin G-M., 45 Misc. 3 d 574 (N.Y. Sup. Ct. 2014); McLaughlin v. Jones, 401 P.3 d 492 (Ariz. 2017) and the others additional precedents mentioned by Cahill, ibid, at 2279. [↑](#footnote-ref-149)
150. *See*, for example, Suzanne Bryant, *Second Parent Adoption: A Model Brief*, 2 Duke J. Gender L. & Pol'y 233 (1995); Jane S. Schacter, *Constructing Families in a Democracy: Courts, Legislatures and Second-Parent Adoption*, 75 Chi.-Kent L. Rev. 933 (2000); [Daphne L. McClellan](https://www.tandfonline.com/author/McClellan%2C+Daphne+L), *The “Other Mother” and Second Parent Adoption*, 13(3) Journal of Gay & Lesbian Social Services 1 (2001). [↑](#footnote-ref-150)
151. *See* Human Fertilization and Embryology Act § 30 (1990); Human Fertilization and Embryology Act § 54 (2008); The Human Fertilisation and Embryology (Parental Orders) Regulations 2010; The Human Fertilisation and Embryology (Parental Orders) Regulations 2018, [The Human Fertilisation and Embryology (Parental Orders) Regulations 2018 (legislation.gov.uk)](https://www.legislation.gov.uk/uksi/2018/1412/contents/made). *See also* [Margaret](http://repositorio.gire.org.mx/browse?type=author&value=Brazier%2C+Margaret) Brazier et al, [Surrogacy: Review for the UK Health Ministers of Current Arrangements for Payments and Regulation. Consultation Document and Questionnaire](http://repositorio.gire.org.mx/handle/123456789/2293) 6-9 (1997); Rebecca Probert, *Families, Assisted Reproduction and the Law*, 16 Child & Fam. L. Q. 273 (2004); [Wendy Norton](javascript:void(0);) et al., *A Survey of UK Fertility Clinics' Approach to Surrogacy Arrangements*, 31(3) Reproductive BioMedicine Online 327 (2015). [↑](#footnote-ref-151)
152. *See* mainly the following Hebrew references: Ministry Of Labor, Social Affairs and Social Services, Professional Committee to Review Criteria for the Issuance of the Judicial Parental Order (Inter-Ministerial Committee), <https://perma.cc/QRW6-Z7R3>; Yehezkel Margalit, *Legal Parenthood - Law and Justice,* 47 Hebrew University Law Review 131 (2018); Yehezkel Margalit, *A Decade to the Israeli Revolution of Parental Orders*, Hukim Law Review (forthcoming, 2024) (Heb.). For a recent English description of it, see [Naaman, The](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22), *supra* note 7, at 235-44. [↑](#footnote-ref-152)
153. Margalit, Determining, *supra* note 61, at 157 ("Consequently, another acute challenge to the traditional familial structure is the recognition of three legal parents – same-sex marital partners and their gamete donor, especially two lesbians and their known sperm donor.") [↑](#footnote-ref-153)
154. *See*, amongst others, Charo, *supra* note 66; Laura N. Althouse, *Three's Company? How American Law Can Recognize a Third Social Parent in Same-Sex Headed Families*, 19 Hastings Women's L.J. 171 (2008); Emily B. Gelmann, *What about Susan: Three's Company, Not a Crowd: The Importance of Allowing Third Parent Adoptions When Both Legal Parents Consent*, 30 Wis. J. L. Gender, & Soc'y 57 (2015). [↑](#footnote-ref-154)
155. As Smith v. Cole, 553 So.2d 847 (La.1989); State on behalf of J.R. v. Mendoza, 240 Neb. 149 (Neb 1992); T.D. v. M.M.M., 730 So.2d 873 (La.1999); In re Nicholas H., *supra* note 94; In re Jesusa V., 32 Cal.4th 588 (Cal. 2004); J.R. v. L.R., 386 N.J. Super. 475, 902 A.2d 261 (N.J. 2006). [↑](#footnote-ref-155)
156. As LaChappelle v. Mitten, 607 N.W.2d 151, 160 (Minn. Ct. App. 2000); A.A. v. B.B., [2007] 220 O.A.C. 115, P 14 (Can.); Jacob v. Shultz-Jacob, 923 A.2d 473 (Pa. Super., 2007). [↑](#footnote-ref-156)
157. *See* Family Law, [*New Frontier in Family Law*](https://lawprofessors.typepad.com/family_law/2018/11/new-frontier-in-family-law.html), Family Law Prof Blog (11.29.2018), https://bit.ly/3rwRVad (recognition of three unmarried adults as the legal parents of a child born within their “polyamorous” family); [Family Law](https://lawprofessors.typepad.com/family_law/2018/11/new-frontier-in-family-law.html), [*Parentage in Throuple*](https://lawprofessors.typepad.com/family_law/2021/04/parentage-in-throuple.html), [Family Law Prof Blog](https://lawprofessors.typepad.com/family_law/) (4.28.2021), [Family Law Prof Blog (typepad.com)](https://lawprofessors.typepad.com/family_law/2021/04/parentage-in-throuple.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+typepad%2FVMiI+%28Family+Law+Prof+Blog%29). For an academic discussion of this recent phenomenon, see Daniela Cutas, *On triparenting. Is having three committed parents better than having only two?* 37 Journal of Medical Ethics 735 (2011); Colleen M. Quinn, *Mom, Mommy & Daddy and Daddy, Dad & Mommy: Assisted Reproductive Technologies & the Evolving Legal Recognition of Tri-Parenting*, 31 J. Am. Acad. Matrimonial Law 175 (2018); [Drra Simon*, Polyparenting: When Children Have More than Two Parents*](https://www.americanbar.org/groups/family_law/publications/family-advocate/2023/summer/polyparenting-when-children-have-more-two-parents/), 46 Fam. Advoc. 4 (2023). [↑](#footnote-ref-157)
158. *See* mainly Margalit, To Be, *supra* note 125, at 369, 372-4, 389; Margalit, Bridging, *supra* note 9, at 26-8; Margalit, Determining‏, *supra* note 61, at 163-8. [↑](#footnote-ref-158)
159. *See* Elizabeth S. Scott, *Pluralism*, *Parental Preference, and Child Custody*, 80 Cal. L. Rev. 615 (1992); Shelley A. Riggs, *Is the Approximation Rule in the Child's Best Interests? A Critique from the Perspective of Attachment Theory,* 43 Family Court Review 481 (2005); Richard A. Warshak, *Punching the Parenting Time Clock: The Approximation Rule, Social Science, and the Baseball Bat Kids*, 45 Fam. Ct. Rev. 600 (2007). [↑](#footnote-ref-159)
160. *See* ALI, Principles of the Law of Family Dissolution: Analysis and Recommendations 2.08(1) (2000). *See also* Marygold S. Melli, *The American Law Institute Principles of Family Dissolution, the Approximation Rule and Shared-Parenting*, 25 N. Ill. U. L. Rev. 347 (2005). For an Israeli call to adopt this rule as the default for determining the appropriate type of custody instead of the current tender years doctrine, see Yehezkel Margalit,*From the Tender Years Doctrine to the Approximation Rule – Between Family Law and Contract Law,* 15 Haifa Law Review 15 (2021) (Heb.). [↑](#footnote-ref-160)
161. *See* Sarah H. Ramsey, *Constructing Parenthood for Stepparents: Parents by Estoppel and De Facto Parents Under the American Law Institute's Principles of the Law of Family Dissolution,* 8 Duke J. Gender L. & Pol'y 285 (2001); Mary Coombs, *Insiders and Outsiders: What the American Law Institute Has Done for Gay and Lesbian Families*, 8 Duke J. Gender L. & Pol'y 87 (2001); Helene S. Shapo, *Assisted Reproduction and the Law: Disharmony on a Divisive Social Issue*, 100 Nw. U. L. Rev. 465, 470-1 (2006). [↑](#footnote-ref-161)
162. For this latter variant of functional parenthood, see Julie Shapiro, *De Facto Parents and the Unfulfilled Promise of the New ALI Principles,* 35 Willamette L. Rev. 769 (1999); ALI, *supra* note 160, § 2.03(1)(c); David M. Wagner, *Balancing "Parents Are" and "Parents Do" in the Supreme Court's Constitutionalized Family Law: Some Implications for the ALI Proposals on De Facto Parenthood,* 2001 BYU L. Rev. 1175 (2001). [↑](#footnote-ref-162)
163. [Ertman, New](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/conlr30&section=22), *supra* note 96. Her unique proposal was discussed by Yuval Shany, *Binary Law Meets Complex Reality: The Occupation of Gaza Debate*, 41 Israel Law Review 68. 70 n.24 (2008). For a similar call to recognize a variety of parental statuses, see Alison H. Young, *Reconceiving the Family: Challenging the Paradigm of the Exclusive Family*, 6 Am. U. J. Gender & Law 505, 515-6 (1998). [↑](#footnote-ref-163)
164. *See* Melanie B. Jacobs, *Why Just Two? Disaggregating Traditional Parental Rights and Responsibilities to Recognize Multiple Parents*, 9 J. L. Fam. Stud. 309 (2007) especially at 332-5. This notion was discussed by Susan F. Appleton, *Parents by the Numbers*, 37 Hofstra L. Rev. 11, 58-9 (2008). [↑](#footnote-ref-164)
165. I. Glenn Cohen, Chair Lecture, The Second Reproductive Revolution: From Gene Editing, to Uterus Transplants, to Embryos Derived from Our Skin - How Technology Is Changing Reproduction, Petrie-Flom Ctr. For Health L. Pol'y, Biotechnology & Bioethics at Harv. L. Sch. (Apr. 29, 2019, 5:15 PM), [I. Glenn Cohen Chair Lecture - The Second Reproductive Revol (harvard.edu)](https://petrieflom.law.harvard.edu/events/details/i-glenn-cohen-chair-lecture), quoted by George P. II Smith, *Limiting the Boundaries of Assisted Reproductive Technology and Physiological Autonomy*, 25 Quinnipiac Health L. J. 355, 362 n.28 (2022). *See also* Robert H. Blank, Regulating Reproduction (1990). [↑](#footnote-ref-165)
166. *Cf* Cahill, *supra* note 118, at 2227-8. *See also* Greely, *supra* note 49, at 121-36, 232; Courtney Megan Cahill, *After Sex*, 97 Neb. L. Rev. 1, 11-2, 16 (2018). [↑](#footnote-ref-166)
167. For this terming, see mainly [Giuseppe Benagiano](https://www.tandfonline.com/author/Benagiano%2C+Giuseppe) et al., *Contraception Today*, 1092 Ann N Y Acad Sci. 1 (2006); [Giuseppe Benagiano](https://www.tandfonline.com/author/Benagiano%2C+Giuseppe) et al., *Contraception: A social revolution*, 12(1) The European Journal of Contraception & Reproductive Health Care 3 (2007). [↑](#footnote-ref-167)
168. For the first hints in the academic writing for the upcoming "third reproductive revolution", see [Stellan](https://link.springer.com/article/10.1007/s11948-004-0042-4" \l "auth-Stellan-Welin-Aff1-Aff2) Welin, *Reproductive ectogenesis: the third era of human reproduction and some moral consequences*, 10(4) Sci Eng Ethics 615 (2004); Francesca Tomatis, Where Is Women'S Revolution Going? The Effects of Education and Employment on Fertility Behaviours Across Europe unpublished Thesis (Universita' degli Studi di MILANO, 2019), [WHERE IS WOMEN¿S REVOLUTION GOING?THE EFFECTS OF EDUCATION AND EMPLOYMENT ON FERTILITY BEHAVIOURS ACROSS EUROPE (unimi.it)](https://air.unimi.it/handle/2434/633376); Elizabeth Chloe Romanis, *Assisted gestative technologies*, 48 J Med Ethics 439, 439 (2022) ("However, technology is seemingly bringing us to ‘the third reproductive revolution’ with the increasing availability of multiple forms of assisted gestation.")

     [↑](#footnote-ref-168)