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Understandings of Detriment for Resolving Frozen Embryo Disputes

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Abstract

Continuing my previous reference to Alise Panitch's argument that estoppel would be a useful tool for resolving frozen embryo disputes, this article develops her research with reference to the condition of detriment in estoppel. Though Panitch refers to the 'time, money, and psychological commitment necessarily expended in pursuing the full commitment (of IVF)', these notions with respect to detriment have been significantly overlooked, especially in the courts and to a lesser degree in academic literature. This article will accordingly contemplate the physical, psychological and financial detriments to gamete providers if embryos are used against their wishes. Detriment can operate in a variety of circumstances and this article details how detriment could affect women who have sustained repeated failed IVF cycles, and how age affects the subject as well. Following this discussion, it is considered how detriment may affect men and gamete providers not seeking implantation. This leads to a conclusion that detriment is a more significant factor for the female gamete provider seeking implantation.

[C]um venit calamitas, tum detrimentum accipitur[1] *- Cicero*

Introduction

I have previously referred to Alise Panitch's argument that estoppel would be a useful tool in resolving frozen embryo disputes.[2] It was demonstrated how the equitable doctrine of estoppel can provide legal solutions in managing the gendered distinctions inherent in these disputes. To revisit Panitch, her argument was that 'the greater injustice would be to deny implan-

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1 Translation: When calamity comes, then detriment is sustained. M Cicero, 'Oratio Pro Lege Manilia' in *Orationes Selectæ* (first published edn, John R Priestley 1837) 76.

2 A Chrysanthou, 'Reliance and Representations/Promises in Frozen Embryo Disputes: UK and Israeli Approaches to Estoppel' (2019) 19(1) Medical Law International 32.

tation to the spouse who detrimentally relied on the other's words and conduct'.[3] This article will develop Panitch's argument specifically with reference to the condition of detriment in estoppel. Though Panitch refers to the 'time, money, and psychological commitment necessarily expended in pursuing the full commitment (of IVF)',[4] these notions with respect to detriment have been significantly overlooked. This article will accordingly contemplate the physical, psychological and financial detriments[5] to gamete providers if embryos are used against their wishes. Detriment can operate in a variety of circumstances and thus it is important to understand how detriment could affect women who have sustained repeated failed IVF cycles, and how age affects the subject as well. Following this discussion, it is considered how detriment may affect men and gamete providers not seeking implantation. This leads to a conclusion that detriment is a more significant factor for the female gamete provider seeking implantation.

Analysis of detriment requires definition, an understanding of the place of risk, and the point at which detriment can be measured. In cases of proprietary estoppel, detriment is not presumed and must be proved.[6] The Court of Appeal judgment in *Gillett v Holt*[7] laid out important directions concerning the assessment of detriment of proprietary estoppel, which are also likely to be relevant if discussed in the context of promissory estoppel. Robert Walker LJ (as he then was) held that detriment is 'not a narrow or technical concept' and is 'something substantial'.[8] The requirement must be approached as part of a broad inquiry as to whether repudiation of an assurance is or is not unconscionable in all the circumstances'.[9]

Detriment for specifically promissory estoppel does not necessarily need to be shown,[10] although Wall J did consider its application in the seminal case

3 A Panitch, 'The *Davis* Dilemma. How to Prevent Battles Over Frozen Embryos', (1999) 41 Case Western Law Review 543.

4 ibid 575.

5 E Waldman, 'The Parent Trap: Uncovering the Myth of "Coerced Parenthood" in Frozen Embryo Disputes' (2004) 53 (5) American University Law Review 1021, 1053.

6 *Thorner v Major* [2009] UKHL 18 [15], [29] (Lord Scott) [60] (Lord Walker).

7 *Gillett v Holt* [2001] Ch 210 (CA) 231-35.

8 ibid 232.

9 ibid 232 (Robert Walker LJ). This has also been accepted by the Privy Council, *Kelly and Others v Fraser* [2012] UKPC 25 [17] (Lord Sumption JSC). That the 'broad inquiry' is also relevant for *promissory* estoppel was confirmed by *Collier v P & MJ Wright (Holdings) Ltd* [34] (Arden LJ).

10 *D & C Builders Ltd v Rees* [1966] 2 QB 617 (CA) 624 (Lord Denning MR). However, Sean Wilken and Karim Ghaly have argued that detriment is required in all types of estoppel, since 'detriment is an essential prerequisite for establishing inequity'. S Wilken and K Ghaly, *The Law of Waiver, Variation and Estoppel* (3rd ed. Oxford University Press 2012) 95. However, Lord Denning noted: 'I know that it has been suggested in some quarters that there must be detriment. But I can find no support for it in the authorities cited by the judge'. *WJ Alan & Co Ltd v El Nasr Export and Import Co* [1972] 2 QB 189 (CA) 213 (Lord Denning).

concerning frozen embryo disputes in the UK of *Evans v Amicus Healthcare Ltd*.[11] Whether or not it is required, its existence may still be considered by a court and improve the strength of the argument in the context of promissory estoppel.[12] Though the condition of detriment is discussed far more in cases concerning proprietary estoppel, as will be seen in this article however, the equity of seeking to avoid or prevent detrimental reliance should allow a reading across of different types of estoppel in frozen embryo disputes, regardless of whether promissory or proprietary are raised.[13]

Detriment can carry a variety of meanings[14] and has been considered as not 'meaning anything more than "putting under a disadvantage"'.[15] Such an expansive meaning will be expedient for this article as a variety of different types of disadvantage that gamete providers may face in pursuing IVF treatment are considered. Some of the disadvantages mentioned below, such as psychological harm and emotional distress, are difficult to quantify. Robert Walker LJ indicated that in cases where this difficulty exists 'the court has to exercise a wide judgmental discretion'.[16] The purpose is to find a 'fair balance... between competing interests'.[17] For dissenting Judges Traja and Mijoviĉ at the European Court of Human Rights (ECtHR), the key to this balancing exercise was that Ms Evans neither had other children nor the possibility of having other genetically related children.[18] Previous estoppel case law has involved a balancing exercise to assess whether benefits outweigh disadvantages,[19] and this approach in a frozen embryos dispute would therefore be sound. Panitch has argued that such a balancing exercise should be employed to demonstrate that the harm facing the gamete provider seeking implantation outweighs the harm caused by denying a 'double consent rule'[20] (a rule in which consent is required twice: first, before treatment commences, and second, before implantation).[21] To hold otherwise

11 [2003] EWHC 2161 (Fam) [67].
12 *Goldsworthy v Brickell and Another* [1987] Ch 378 (CA) (Nourse LJ).
13 This is the approach Wall J employed in the context of assurances. *Evans v Amicus Healthcare Ltd* [2003] [300].
14 For an example of a debate in Australia between two academics, see D Ong, 'Equitable Estoppel: Defining the Detriment' (1999) 11(1) Bond Law Review 136; and M Pratt, 'Equitable Estoppel: Defining the Detriment – A Reply to Denis Ong' (2000) 12(1) Bond Law Review 48.
15 *Ministry of Defence v Jeremiah* [1980] QB 87, 99 (CA) (Brandon LJ).
16 For example, caring for an elderly person and being 'subservient to his or her moods and wishes'. *Jennings v Rice* [2002] EWCA (Civ) 159 [51].
17 *Evans v United Kingdom* [2006] 43 EHRR 21 [59]. See also at [66]-[69]; *Evans v United Kingdom* [2008] 46 EHRR 34 [92].
18 *Evans v United Kingdom* [2006] [O-16].
19 *Henry v Henry* [2010] UKPC 3 PC [53].
20 Panitch 'The *Davis* Dilemma. How to Prevent Battles Over Frozen Embryos', 572.
21 ibid 574-77.

would indicate 'unfairness'.[22] Moreover, in *Szafranski v Dunston*[23] the Appellate Court of Illinois also opined in *obiter dicta* that in the absence of an enforceable agreement, promissory estoppel could be relied upon by weighing the parties' respective interests.[24]

Many of the factors considered below, in association with IVF treatment, involve only a *risk* of disadvantage to the gamete provider. These risks must be properly accounted for in frozen embryo disputes. Feminist critique has long recognised that the risks undertaken by women in reproduction are not fairly valued,[25] and thus to avoid such critique, it is important to understand how risk can be conceived in estoppel.

Estoppel case law shows that risk can indicate detrimental reliance. In a maritime case in which a successful plea of estoppel by convention was made, Bingham LJ took into account the commercial risk a sub-charter involved, holding that 'risk is a detriment to the party who enters into such a transaction'.[26] If risk can be taken into account in commercial arrangements, in which parties are more readily expected to engage in risk management, then it should also be permitted as forming part of detriment in the familial context. The concept of risk may be tackled from an alternative perspective. There is always a degree of risk whenever one believes and acts upon another's representation. However, in proprietary estoppel cases in which a relative is led to believe that he or she will inherit land, Graham Virgo has suggested 'a relationship of trust and confidence between the representor and representee'[27] indicates that proprietary estoppel should not be defeated notwithstanding the risk involved in relying on the representation.[28] This case law illustrates that estoppel can assist gamete providers in avoiding the moral hazard of asymmetric information involved in

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22 ibid 575.

23 34 NE3d 1132 (Ill App Ct 2015).

24 *Szafranski v Dunston* 34 NE3d 1132 (Ill App Ct 2015) [137]. The Court declined to expand its ruling to resolve the dispute under promissory estoppel based on the circumstances of an enforceable oral agreement.

25 Simone de Beauvoir related that man posits himself above the animal by his ability to risk his life on the battlefield, whilst women's risks of giving life in reproduction do not grant her superiority. S Beauvoir, *The Second Sex* (C. Borde and S. Malovany-Chevalier trs, first published 1949, Vintage Books 2010) 99.

26 *Norwegian American Cruises (Formerly Norwegian American lines) v Paul Mundy (The 'Vistafjord')* [1988] 2 Lloyd's Rep 343, 349 (Bingham LJ). In this case the defendant passenger sales agent agreed to sell tickets for the owner of a cruise-liner. The agent then agreed to sub-charter the cruise-liner to a third party. The agent was not entitled to commission according to a prior agreement, although it was assumed by all parties concerned that the agent was entitled. The agent was found to be entitled to the commission on the basis of estoppel by convention.

27 G Virgo, *The Principles of Equity and Trusts* (Oxford University Press 2012) 349.

28 ibid.

one party being more aware than the other that the relationship may break down and that IVF treatment may have to consequently be interrupted.

A further issue for analysis is to consider the point at which detriment can be measured. The classical approach was laid out by the High Court of Australia in *Grundt v Great Boulder Pty Gold Mines Ltd*[29] and has been to measure detriment from the moment at which the representor resiles:

[T]he real detriment or harm from which the law seeks to give protection is that which would flow from the change of position if the assumption were deserted that led to it (...) the party who altered his situation on the faith of it cannot complain. His complaint is that when afterwards that other party makes a different state of affairs the basis of an assertion of rights against him, then if it is allowed, his own original change of position will operate as detriment.[30]

In the context of frozen embryo disputes however this would not mean that harm that occurred before the change of position could not be taken into account if the interpretation of *Grundt* by Denis Ong holds sway, which is that the estoppel seeks to prevent expectations being abandoned by representors.[31] The detriment which would flow from the change of position in this sense would be the use or destruction of the embryos without consent. Academic opinion of frozen embryo disputes holds that the burdens expended in IVF before the representor resiles should form part of the detriment.[32] In *Thorner* Lord Walker approved[33] Hoffmann LJ (as he then was) in which he contrasted equitable estoppel with contract law on the basis that,

it does not look forward into the future and guess what might happen. It looks backwards from the moment when the promise falls due to be performed

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29 [1937] 59 CLR 641, 674.

30 ibid 674 (Dixon J). *Grundt* has been described as the '*locus classicus*' on estoppel by conduct, both in England and Australia. Pratt, 'Equitable Estoppel: Defining the Detriment – A Reply to Denis Ong', 49. The Court of Appeal has also held that, 'The issue of detriment must be judged at the moment when the person who has given the assurance seeks to go back on it'. *Gillett v Holt* [2001], 232 (Robert Walker LJ).

31 Denis Ong, 'Equitable Estoppel: Defining the Detriment' (1999) 11(1) Bond Law Review 136. However, see criticism of this view from Pratt, 'Equitable Estoppel: Defining the Detriment – A Reply to Denis Ong', 48.

32 'The prejudice [detriment] to the other spouse consists of money, time and the psychological commitment necessarily expended in pursuing the full procedure. The injury would include not only the time and money spent, but also the last opportunity to have a child'. Panitch 'The *Davis* Dilemma. How to Prevent Battles Over Frozen Embryos', 575. This was approved in CA 2401/95 *Nahmani v Nahmani* [1995-96] IsrSC 50(4) 661, 44 (Tal J), 99 (Bach J).

33 *Thorner v Major* [2005] [57].

and asks whether, in the circumstances which have actually happened, it would be unconscionable for the promise not to be kept.[34]

The dissenting judges at the Supreme Court of Israel in *Nahmaniv Nahmani*[35] and the Supreme Court of Ireland in *Roche v Roche*[36] also tellingly did not attempt to argue that detriment must only flow after the men resiled, but rather respectively held that there was no valid representation or agreement to rely upon. Also, the burdens of IVF treatment may have to be repeated with another gamete provider to restore the representee to her original position, and therefore the similar (if not the same) burdens undertaken after the representor resiles should also count as detriment before he resiles. Although *Grundt* was not referred to by the majority in *Nahmani*, its rationale seems to have been adopted by Tal J—'whoever changes course has the disadvantage',[37] and Goldberg J—'the just conclusion that there is no going back, and whoever wishes to make a change is at a disadvantage'.[38] This is the preferable viewpoint, and linked to the same rationale I previously mentioned[39] concerning the role of expectations in determining unconscionability.[40]

Detriment to the Female Gamete Provider Seeking Implantation in Law

A female gamete provider seeking implantation will have strong grounds for showing that she acted to her detriment when she underwent treatment before her partner resiled on his representation(s) that treatment should be continued. To justify this assertion, reference is made to *Evans*, other frozen embryo disputes, and also relevant legal, scientific, psychological and sociological research. In general, it will be shown that the woman seeking implantation incurs a greater detriment than the male not seeking implantation in IVF treatment. In the US, John Robertson downplayed the differences to the parties pursuing IVF treatment, suggesting it should not prioritise interests since the 'difference in bodily burdens between the man and the woman in IVF

34 *Walton v Walton* [1994] CA Transcript No 479 [16].
35 Nahmani v Nahmani [1995-96] 123 (*Strasberg-Cohen J*) 131 (*Or J*) 150 (*Zamir J*).
36 [2010] 2 IR 321 [40].
37 *Nahmani v Nahmani* [1995-96] 43 (Tal J).
38 ibid 79 (Goldberg J).
39 Chrysanthou, 'Reliance and Representations/Promises in Frozen Embryo Disputes: UK and Israeli Approaches to Estoppel' 44-45.
40 This is unsurprising since it has been argued that '[t]here is considerable overlap between detriment and unconscionability'. Wilken and Ghaly, *The Law of Waiver, Variation and Estoppel* (2012) 236.

is not so great (especially with transvaginal aspiration of eggs) that it should be automatically determine decisional authority over resulting embryos'.[41]

To label the effort exerted in IVF as necessarily 'not so great' for the woman will be shown to be erroneous, yet Robertson's viewpoint has been highly influential. More recent commentary has framed the competing interests between gamete providers in equivalent terms. Thus, Erin Nelson claimed that, 'it is arguable that the harms [of not allowing the reproductive autonomy of one gamete provider]... may be evenly balanced' and 'the harm of forcing an ongoing parental relationship on the former partner is more pronounced than ruling out a woman's wish to be a genetic parent'.[42] In case law, similar notions have held sway. The Supreme Court of Tennessee considered that the equivalency of rights between gamete providers was not undermined by the greater burden borne by the female gamete provider.[43] The Court considered that the emotional stress and physical discomfort endured by the woman 'is more severe than is the impact of the procedure on men'.[44] Yet the equivalency of rights was maintained because the gamete providers' experience 'must be viewed in light of the joys of parenthood that is desired or the relative anguish of a lifetime of unwanted parenthood'.[45] The Court's comments seem to suggest that the value of the interests involved in the freedom to choose to become a parent to the gamete provider seeking implantation minus the (normally) more severe emotional stress and physical discomfort involved in treating the female gamete provider (if applicable), are equivalent to the value of interests involved in choosing not to be a parent and the anguish of unwanted parenthood on the part of the gamete provider not seeking implantation. The ECtHR took a similar approach in *Evans*: 'The Court is not persuaded by the applicant's argument that the situation of the male and female parties to IVF treatment cannot be equated...'.[46] Both views from these courts require greater substantiation from psychological and sociological perspectives to show that the male and female detriments are equivalent. The position the courts have taken belies that the balance of burdens and benefits in the *future* to both gamete providers necessarily outweighs the detriment endured by the female in the past. Even if this assumption is made, the courts seemed immune to the argument that even if

41 J Robertson, 'Resolving Disputes over Frozen Embryos' (1989) 19(6) Hastings Centre Report 7.
42 E Nelson, *Law, Policy and Reproductive Autonomy* (Hart 2013) 315.
43 *Davis v Davis* 842 SW 2d 588 (Tenn 1992) 589.
44 ibid (Daughtrey J). The Court proceeded to stated that in this sense, 'it is fair to say that women contribute more to the IVF process than men'. ibid.
45 *Davis v Davis* (1992) 589.
46 *Evans v United Kingdom* [2008] [66].

the balance of future burdens and benefits are equivalent, the greater detriment already endured by the female should tip the balance in her favour.

The courts in *Evans* barely mentioned the significance of the treatment Ms Evans had already received.[47] All courts examining the *Evans* litigation mentioned 'sympathy' for Ms Evans, though in somewhat ambiguous terms, with little mention that this sympathy was in relation to the onerous fertility treatment she had received. Wall J mentioned sympathy for her 'medical condition'[48] and 'considerable sympathy' for the 'operation for the removal of her ovaries immediately following the harvesting of her eggs'[49] and that 'the frozen embryos represent her only chance of giving birth to a child which is genetically hers'.[50] Similarly, in other jurisdictions, those judges who have rejected the plea of the woman seeking implantation have often paid scant attention to the burden of IVF treatment.[51] The ECtHR mentioned 'great sympathy', but only because Ms Evans was 'deprived of the ability to give birth to her own child'.[52] The Grand Chamber of the ECtHR also mentioned 'great sympathy for the applicant, who clearly desires a genetically related child above all else…'.[53] In an Israeli frozen embryo dispute, a dissenting judge also mentioned 'sympathy and understanding' for the female's 'aspiration'.[54] The Courts should have interrogated the rationale for their sympathy more. The lack of ascription of understanding regarding the *medical procedures* the woman had to undergo may indicate that the Courts did not appreciate the significance of this treatment in relation to detriment.

Wall J provided the facts of the treatment which the appellate courts subsequently relied on.[55] Following Wall J's factual analysis, all the Courts involved in the *Evans* litigation glossed over the potential significance to a female gamete provider of hormone treatment and oocyte retrieval. Arden LJ, the only female judge to hear the *Evans* litigation in the English and Welsh courts, was the exception. She alluded to IVF treatment as 'perhaps unpleasant and certainly in-

47 A report chronicling Ms Evans' treatment was made available to the courts through a statement from Dr Sharp, *Evans v Amicus Healthcare Ltd* [2003] [41].
48 ibid [45].
49 ibid [24].
50 ibid.
51 Strasberg-Cohen J's dissenting judgment contained one sentence in reference to this: 'Ruth's contribution to the fertilization involved suffering and effort beyond those involved in Daniel's contribution'. *Nahmani v Nahmani* [1995-96] 33.
52 *Evans v United Kingdom* [2008] [67].
53 ibid [90].
54 *Nahmani v Nahmani* [1995-96] 11 (Strasberg-Cohen J).
55 *Evans v Amicus Healthcare Ltd* [2003] [40]-[44].

trusive',[56] but without further elaboration. At the ECtHR, it was mentioned, again without necessary explanation, that there is 'clearly a difference of degree between the involvement of the two parties in the process of IVF treatment'.[57] Ms Evans' contention at the Grand Chamber of the ECtHR that her 'greater physical and emotional expenditure during the IVF process'[58] should provide her with the veto was also given short shrift, where it was held that there was an absence of 'clear consensus' on this point.[59] IVF treatment was seen to give rise to 'sensitive moral and ethical issues', but no mention was made of the physical or medical issues.[60] Consequently, the margin of appreciation afforded to the UK to legislate with respect to variation of consent was a wide one.[61] The dissenting judges, however, recognised that, 'A woman is in a different situation as concerns the birth of a child, including where the legislation allows for artificial fertilisation methods,' which stemmed from the 'excessive physical and emotional burden and effects caused by her condition'.[62] This viewpoint will be explored further in the following section.

Detriment to the Female Gamete Provider in Reality

An inquiry into the IVF procedure from the perspective of the woman will now be provided to elucidate the burdens it carries which have not been mentioned or sufficiently considered by the courts. The purpose is to provide a better understanding of the potential detriment to the woman. It is important that the courts adequately value the 'greater physical and emotional expenditure'[63] borne by the woman.

Prior to a decision to undertake IVF, there are a range of other medical treatments for infertility which might be available for both males and females, each carrying varying degrees of potential burdens. If these treatments are carried out before IVF treatment, it is unlikely they would not be considered as part of the same sequence of treatment to resolve an infertility issue, especially if their aim is to achieve conception by way of sexual intercourse. Nonetheless, due to the wide discretion of the court in being able to assess detriment and

56 *Evans v Amicus Healthcare Ltd* [2004] EWCA (Civ) [82].
57 *Evans v United Kingdom* [2008] [66].
58 ibid [80].
59 ibid.
60 ibid [81].
61 ibid [81][82].
62 ibid [O-I 15]. This was also recognised by the Circuit Court for Blount County, Tennessee: 'Mrs. Davis went through many painful, physically tiring, emotionally and mentally taxing procedures' (*Davis v Davis* No E-14496 (Tenn CC, Blount Cty, Div 1 1989), 25 (Young J)).
63 *Evans v United Kingdom* [2008] [80].

unconscionability, it is possible these factors might carry some weight, especially if the gamete provider seeking implantation has a significant medical history of receiving treatment to become a genetic parent with embryos created using the sperm of her partner. This was clearly the case in *Davis v Davis*[64] in which the female gamete provider, Ms Davis, had:

> [S]uffered an extremely painful tubal pregnancy, as a result of which she had surgery to remove her right fallopian tube. This tubal pregnancy was followed by four others during the course of the marriage. After her fifth tubal pregnancy, Mary Sue chose to have her left fallopian tube ligated, thus leaving her without functional fallopian tubes by which to conceive naturally.

The factual circumstances peculiar to each party may give rise to further disadvantages which should be factored into considerations of detriment. If IVF is pursued in addition to another medical procedure, then the reproductive treatment may represent an additional risk for the woman. In *Reber v Reiss*[65] the wife, Ms Reiss, deferred treatment for breast cancer for several months for the purposes of fertility treatment.[66] Similarly, in the Israeli case of *Nahmani Nahmani*, the decision not to expose the wife's ovaries to radiation by pushing them to one side during her hysterectomy 'endangered her health'.[67] This endangerment occurred before the decision to pursue IVF had been taken according to the facts noted in the Supreme Court of Israel.[68]

The possibility of anxiety, obviously, does not commence only with IVF treatment, but also in the build up to it.[69] Women have been found to have significantly higher levels of depression, state anxiety[70] and infertility specific

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64 *Davis v Davis* (1992), 591. The female gamete provider in another US case also suffered an ectopic pregnancy which necessitated the removal of a fallopian tube, followed by another which resulted in the removal of her other fallopian tube. AZ v BZ 725 431 Mass 150 (2000) 152.

65 No 1351 EDA 2011 (Pa Super 2012).

66 ibid.

67 *Nahmani v Nahmani* [1995-96] 52.

68 The hysterectomy occurred in 1987, but the couple only decided to pursue IVF in 1988. *Nahmani v Nahmani* [1995-96] 35.

69 This has long been recognised, and in research of surgery before general anaesthesia it was reported that in one case surgeons decided to limit the anxiety of one patient 'by choosing a day at random and giving her only two hours' notice before they began'. F Burney, *Selected Letters and Journals* (J Hemlow (ed), Oxford University Press 1986) 127. Even though such a study is not so relevant now, it is still possible for a person having surgery to experience anxiety. For a more recent and relevant study see J. Stoddard et al, 'Impact of a Brief Intervention on Patient Anxiety prior to Day Surgery' (2005) 12(2) Journal of Clinical Psychology in Medical Settings 99-110.

70 State anxiety is 'perceived anxiety that occurs only in certain situations. Cognitive or somatic anxiety can also be state anxiety'. It can be distinguished from trait anxiety which refers to a 'stable trait of anxiety that some people have as part of their personality'. C Brain, *Advanced Psychology: Applications, Issues and Perspectives* (Nelson Thornes 2002) 191.

distress prior to IVF treatment.[71] These points are illustrative that detriment relevant to estoppel can be present even before IVF has occurred, since the couple or individual can make plans and arrangements for reproduction, which may have a greater detrimental impact on one party.

The article now focuses on the two aspects of IVF treatment fundamental to considerations of detriment: hormonal treatment for ovulation stimulation/induction, which is followed by oocyte retrieval. The hormonal aspect of IVF treatment can last around two weeks, and has been described as an invasive and often painful treatment.[72] To stimulate ovulation, Ms Evans was first prescribed clomid,[73] which has a range of possible side effects including visual disturbances, hot flushes, dizziness, breast tenderness, abdominal bloating,

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71 C Wichmann et al, 'Comparison of Multiple Psychological Distress Measures between Men and Women Preparing for In Vitro Fertilization' (2011) 95(2) Fertility and Sterility 717. Wichmann advised by email to the present author that distress measurements were retrieved before any IVF treatment had commenced, but patients may have had a course of clomid or a previous cycle of IUI. See also V Peddie, E Van Teijlingen and S Bhattacharya, 'A Qualitative Study of Women's Decision-Making at the End of IVF Treatment' (2005) 20(7) *Human Reproduction* 1944, 1946: 'A common response from women was related to the stress caused by IVF treatment, and the process of decision-making often exacerbated this. However, relief of the cyclical process of 'treatment and stress' was evident once the final decision to end treatment was made. One interviewee (008) indicated that: 'the IVF for me was an extremely traumatic experience and I just wanted it all to end' (008), and went on to clarify that it was her life that she wanted to end'. Others reported similar feelings of depression: 'The GP started me on antidepressants. I just wasn't coping with it all' (028), or: 'In a way, I felt quite depressed, not in the clinical sense, but I felt so low, so down, in a way I had never felt before. That lasted for about two months and I decided then that I never wanted to feel like that again'. It has also been reported that women in particular may suffer a grief reaction following failed IVF which may be quite disruptive to their lives. D Greenfield, M Diamond and A Decherney 'Grief Reactions following In-Vitro Fertilization Treatment' (1998) 8(3) Journal of Psychosomatic Obstetrics & Gynecology 169.

72 This is known as ovulation induction or ovulation stimulation for IVF. Such treatment however would not be required for *in vitro* maturation (IVM). The difference between IVM and IVF is that for the former the eggs are removed from the woman's ovaries at an immature stage. They are then matured in the laboratory and then fertilised. In IVF the eggs are mature when collected. The significance of this here is that the use of hormonal medication is minimised or excluded in IVM. Such stimulating drugs are not always necessary for IVF, but they improve success rates significantly on average. P Uzelac, G Christensen and S Nakajima, 'The Role of In Vitro Maturation in Fertility Preservation' in C Gracia and T Woodruff, eds, *Oncofertility Medical Practice: Clinical Issues and Implementation* (Springer 2012) 77ff; B Ata et al, 'In Vitro Maturation of Oocytes as a Fertility Preservation Strategy' in M Bedaiwy and B Rizk, eds, *Fertility Preservation: Advances and Controversies* (Jaypee Brothers Medical Publishers 2014) 111ff.

73 *Evans v Amicus Healthcare Ltd* [2003] [42].

nausea[74] and multiple pregnancy.[75] The hormonal treatment can meant that instead of producing one or two eggs, a woman may produce as many as forty eggs in a cycle.[76] This may indicate that some women feel compelled to use such drugs if a choice exists. Ms Evans received clomid for approximately eight months,[77] however she had also used the drug beforehand.[78] The use of clomid 'for more than 12 months has [also] been associated by some early reports with a slight increase in the risk of ovarian cancer, although this has not been subsequently proven'.[79] This is evidence that clearly could be factored into an understanding of detriment and unconscionability.

Following a lack of success in reproduction, Ms Evans had a hysterosalpingogram,[80] which is a 'diagnostic procedure used to assess whether the fallopian tubes are blocked or open'.[81] There is a degree of invasiveness as the dye is injected into the tubes,[82] which can lead to cramps lasting several hours,[83] with extreme pain reported in one account.[84] The procedure carries a risk of causing

74 E Meridis and S Lavery, 'Drugs in Reproductive Medicine' (2006) 16 Current Obstetrics & Gynaecology 281, 282. One patient reports the significant side effects: 'I had dizzy spells, a constant pain in the left side of my belly and a funny feeling inside my head... I couldn't see sharply any more. I saw lights and colours and I felt kind of strange/funny inside my head. I remember on time at school when I began to panic because I couldn't see clearly. It made me feel unbalanced and insecure. While working with pupils I suddenly couldn't remember the simplest things. Was that a side effect of the drug as well? I almost couldn't believe it. I also suffered from a pain in my belly which dragged on and on. Emotionally I wasn't stable any more'. R Rowland, *Living Laboratories* (Indiana University Press 1992) 21-22 quoted from K Steins, 'Personal Communication from Titia Elser', in R Klein (ed), *Infertility. Women Speak out About Their Experiences of Reproductive Medicine* (Pandora Press 1989).

75 S Lavery, 'Drugs Used in Reproductive Medicine' (2003) 13 Current Obstetrics & Gynaecology 355, 356.

76 S Franklin, 'Dead Embryos: Feminism in Suspension' in L Morgan and M Michaels, eds, *Fetal Subjects, Feminist Positions* (University of Pennsylvania Press 1999) 79. For a brief, general discussion on ovulation inducing fertility drugs, mentioning also the production of forty eggs per cycle, see P Peters, *How Safe is Safe Enough?* (Oxford University Press 2004) 210.

77 *Evans v Amicus Healthcare Ltd* [2003] [42].

78 ibid [40].

79 Meridis and Lavery, 'Drugs in Reproductive Medicine' (2006) *Current Obstetrics & Gynaecology* 282.

80 *Evans v Amicus Healthcare Ltd* [2003] [42].

81 Bath Fertility Centre, 'Glossary of Terms'. Available at: <www.bathfertility.com/glossary-of-terms> (accessed 24 June 2019).

82 The 'dye can then be picked up on an X-ray and will show whether the tubes are patent (open)'. ibid.

83 'Factsheet Hysterosalpingogram', *Reproductivefacts.org*. Available at: <www.reproductivefacts.org/news-and-publications/patient-fact-sheets-and-booklets/documents/fact-sheets-and-info-booklets/hysterosalpingogram-hsg/> (accessed 11 July 2019).

84 'Totally unsuspecting, during the lunch break I made my way to one of the large X-ray practices in the city. Sitting on a sort of gynaecological examination couch, my lower body bared, I was greeted by the radiologist. A tearing pain went through me when he injected the "contrast meal". After the examination, blood was flowing from my vagina. Without a word, I received an intravenous penicillin injection and a prescription for penicillin tablets, which I was to take over the following days in order to prevent any infection of the lower abdominal region. When I left the practice, wobbly at the knees, I was quite decided not to do this. Two hours later, while

cancer (especially bladder).[85] Other risks include infection, fainting, radiation exposure (very low risk), allergy and spotting.[86]

Ovulation stimulation can lead to increased risks of different cancers.[87] In the largest known study it was concluded that 'ovarian stimulation for IVF may increase the risk of ovarian malignancies, especially borderline ovarian tumours'.[88] This is the type of tumour Ms Evans had after taking clomid in attempts to become pregnant whilst with Mr Johnston.[89] Ms Evans was suffering from 'serious'[90] borderline ovarian tumours (BOT), as discovered by a laparoscopy and subsequent laparotomy during initial IVF treatment;[91] and there is 'no consensus whether IVF treatment is safe after conservative treatment of

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I myself was examining a patient (she was a doctor), I was suddenly gripped by a cramp in my lower abdomen such as I had never felt before. I spent the next few hours curled up on a couch in my boss's room. How I cycled home that evening remains a mystery to me. I then swallowed the penicillin tablets with an air of desperation. Subsequently I learnt in discussions with other women that the pain and cramps did not only occur in my case, but are typical. This X-ray examination, the result of which showed no abnormality, was the prelude to the events of the following weeks'. Rowland, *Living Laboratories* (1992), 21-22 quoted from K Steins, 'Give Me Children or Else I Die' in Klein (ed), *Infertility. Women Speak out About Their Experiences of Reproductive Medicine* (1989) 15.

85 P Gyekye et al, 'Cancer Incidence Risks to Patients due to Hysterosalpingography' (2012) 37(2) Journal of Medical Physics 112.

86 'Factsheet Hysterosalpingogram', *Reproductivefacts.org*. Available at<www. reproductivefacts.org/news-and-publications/patient-fact-sheets-and-booklets/documents/fact-sheets-and-info-booklets/hysterosalpingogram-hsg/> (accessed 11 July 2019).

87 A recent Norwegian study showed an increased risk of breast cancer in women after fertility treatment. M Reigstad et al, 'Risk of Breast Cancer Following Fertility Treatment –A Registry Based Cohort Study of Parous Women in Norway' (2015) 136(5) International Journal of Cancer 1140. Daniela Katz et al found women who started IVF after the age of 30 appeared to have an increased risk of developing breast cancer. D Katz et al, 'Beginning IVF Treatments after age 30 Increases the Risk of Breast Cancer: Results of a Case–Control Study' (2008) 14(6) The Breast Journal 1524. See also A Whittemore, R Harris and J Itnyre, 'Characteristics Relating to Ovarian Cancer Risk: Collaborative Analysis of 12 US Control Studies' (1992) 136(10) American Journal of Epidemiology 1184; L Brinton et al, 'Ovulation Induction and Cancer Risk' (2005) 83(2) Fertility and Sterility 261; R Calderon-Margalit, 'Cancer Risk after Exposure to Treatments for Ovulation Induction' (2009) 169(3) American Journal of Epidemiology 365; J Schneider, J Lahl and W Kramer, 'Long-Term Breast Cancer Risk following Ovarian Stimulation in Young Egg Donors: A Call for Follow-Up, Research and Informed Consent' (2017) 34(5) Reproductive BioMedicine Online 480.

88 The study investigated 19,146 women treated for IVF in the Netherlands F van Leeuwen, 'Risk of Borderline and Invasive Ovarian Tumours after Ovarian Stimulation for In Vitro Fertilization in a Large Dutch Cohort' (2011) 26(12) Human Reproduction 3456, 3463. A more recent study found that women treated for deep infiltrating endometriosis with bowel involvement experience a significant risk of worsened symptoms when their treatment is replaced by controlled ovarian stimulation before IVF. M Seyer-Hasan et al, 'Risk of Bowel Obstruction During In Vitro Fertilization Treatment of Patients with Deep Infiltrating Endometriosis' (2018) 97 Acta Obstetricia et Gynecologica Scandinavica 47.

89 *Evans v Amicus Healthcare Ltd* [2003] [42].

90 ibid.

91 ibid.

BOT'[92] and 'it cannot be excluded that the recurrence of the BOT during pregnancy and excessive growth during pregnancy... [is] influenced by IVF treatment'.[93] It should be noted that the very existence of BOT may have been brought about by past IVF cycles (as mentioned above) undertaken by Ms Evans.[94]

More recently Emile Daraï et al. have cautioned that 'ART is usually only proposed to women with early stages of BOT and with BOT showing no aggressive patterns'.[95] According to the reported facts, Ms Evans' cancer was 'growing slowly',[96] and therefore it does not seem that she suffered from aggressive patterns, but nonetheless she still faced a risk. The most recent study in the UK involving records of women who had ART between 1991 and 2010 left 'open the possibility' that the treatment might lead to increased ovarian cancer risk.[97] Brenda Hermsen et al. found that mortality rates from ovarian cancer are high and difficult to detect.[98] If risks are unknown, this does not mean they should not be factored into assessments of detriment. Accounting for the risks in IVF may allay feminist critique that IVF is experimental[99] and exploitative[100] towards women.

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92 N Cabenda-Narain et al, 'Conservatively Treated Borderline Ovarian Tumours, followed by IVF Treatment: A Case Series' 31(4) (2011) Journal of Obstetrics and Gynaecology 327, 328.

93 ibid. The authors do however opine that 'IVF can be considered safe after conservative surgery of BOT and seems not to impair the prognosis of BOT. Nevertheless, all patients with BOT, who receive IVF treatment should be registered and monitored. The results of these data can finally establish the relation between IVF and the risk of recurrent disease'. ibid 329.

94 Van Leeuwen, 'Risk of Borderline and Invasive Ovarian Tumours after Ovarian Stimulation for In Vitro Fertilization in a Large Dutch Cohort' (2011) 3463.

95 E Daraï et al, 'Fertility and Borderline Ovarian Tumor: A Systematic Review of Conservative Management, Risk of Recurrence and Alternative Options' (2013) 19(2) Human Reproduction Update 151, 159.

96 *Evans v Amicus Healthcare Ltd* [2003] [43].

97 A Sutcliffe et al, 'Ovarian Tumor Risk in Women after Assisted Reproductive Therapy (ART); 2.2 million person years of observation in Great Britain' (2015) 104(3) Fertility and Sterility e-37.

98 1335-1342.

99 Gene Corea questioned whether IVF was satisfactorily tested on animals before being provided to humans. Corea also suggested that scientists' desire for recognition and acclaim through producing the first IVF baby took priority over investigations over possible risks. G Corea, *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs* (Harper and Row 1985) 99ff. Another feminist noted that IVF 'had never undergone formal assessment prior to its application'. J Morgall, *Technology Assessment: A Feminist Perspective* (Temple University Press 1993) 186. Another critic labelled IVF as 'an experimental and debilitating technology for women'. J Raymond, *Women as Wombs: Reproductive Technologies and the Battles over Women's Freedom* (HarperCollins 1993) 35.

100 Klein describes IVF as 'a new form of patriarchal violence against women'. R Klein, 'IVF Research: A Question of Feminist Ethics' (1990) 3(3) Reproductive and Genetic Engineering: Journal of International Feminist Analysis 1, 3. See also, R Klein, *The Exploitation of a Desire: Women's Experiences with In Vitro Fertilization* (Deakin University Press 1989).

One of the main risks women face during the period of hormone injections is ovarian hyperstimulation syndrome,[101] in which the ovaries[102] can swell to 5-12cm,[103] and ovarian rupture and thrombophlebitis may follow, and in severe cases acute kidney failure is frequent.[104] In extremely rare cases the syndrome can be fatal.[105] If initial hormone treatment is not successful, then 'more powerful fertility injections may be necessary to stimulate egg production'.[106] One woman described the feeling of being a 'pincushion' after being injected 'with more than 700 needles' after which she 'lost count'.[107] In *Davis* it was recorded that despite a fear of needles Ms Davis underwent at each IVF attempt 'a month of subcutaneous injections necessary to shut down her pituitary gland and then eight days of intermuscular injections necessary to stimulate her ovaries to produce ova'.[108] In the balancing of interests test employed by the Supreme Court of Tennessee, this and the other physical burdens Ms Davis underwent were not even considered as an interest to be balanced (let alone a pivotal one).[109] The Court was not 'unmindful of the fact that the trauma (including both

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101 'The risk of complications after each IVF treatment cycle was low, but cumulatively repeated attempts led to hospital care in the case of many women'. R Klemetti et al, 'Complications of IVF and Ovulation Induction' (2006) 20(12) Human Reproduction 3293, 3296. 'The reported prevalence of the severe form of OHSS is small, ranging from .5 to 5%. Nevertheless, as this is an iatrogenic complication of a non-vital treatment with a potentially fatal outcome, the syndrome remains a serious problem for specialists dealing with infertility'. A Delvigne and S Rozenberg, 'Epidemiology and Prevention of Ovarian Hyperstimulation Syndrome' (2002) 8(6) Human Reproduction Update 559. The significant risk of ovarian hyperstimulation syndrome has led to calls for IVF staff to be, 'reachable 24 h a day, 7 days per week, for women with complaints foreshadowing OHSS, sepsis and other severe complications'. D Braat et al, 'Maternal Death Related to IVF in the Netherlands 1984–2008' (2010) 25(7) Human Reproduction 1782, 1785.

102 Ovaries are normally about 3cm in size. J Lerner and I Timor-Tritsch, 'Morphological Evaluation of the Ovary using Transvaginal Sonography', in A Kurjak (ed), *Ultrasound and the Ovary* (The Parthenon Publishing Group 1994) 116; J Romero, I Sanchez and J Garcia-Velasco, 'The High Responder: Optimizing the Stimulation without Complications' in M Banker et al, eds., *Nova IVI Textbook of Infertility & Assisted Reproductive Technology* (Jaypee Medical Publishers 2019) 352.

103 J Whelan and N Vlahos, 'The Ovarian Hyperstimulation Syndrome' (2000) 73(5) Fertility and Sterility 883, 884.

104 R Akroub et al, 'Acute Kidney Injury Due to Ovarian Hyperstimulation Syndrome' (2019) 73(3) American Journal of Kidney Diseases 416.

105 B Ellison and J Meliker, 'Assessing the Risk of Ovarian Hyperstimulation Syndrome in Egg Donation: Implications for Human Embryonic Stem Cell Research' (2011) 11(9) American Journal of Bioethics 22, 23.

106 University Hospitals Coventry and Warwickshire, 'Ovulation Induction'. Available at <www.uhcw.nhs.uk/ivf/treatments/oi> (accessed 11 July 2018). These injections can last 9 to 12 days. J Boivin, E Griffiths and C Venetis, 'Emotional Distress in Infertile Women and Failure of Assisted Reproductive Technologies: Meta-Analysis of Prospective Psychosocial Studies' (2011) 342 BMJ 481.

107 H Steiner, *Sensational Journeys: 48 Personal Stories of Sensory Processing Disorder* (Future Horizons 2011) 211.

108 *Davis v Davis* (1992) 591.

109 ibid 603-4 (Daughtrey J).

emotional stress and physical discomfort) to which women are subjected in the IVF process is more severe than is the impact of the procedure on men.'[110] Nonetheless, somewhat bizarrely it is suggested, '*None* of the concerns about a woman's bodily integrity that have previously precluded men from controlling abortion decisions is applicable here'.[111] Although the bright line of the location of an embryo within a woman is indeed not applicable, there are concerns over bodily integrity that parallel both 'natural' pregnancy and IVF prior to implantation; namely the significant engagement of a woman's body. Though that engagement is neither the same nor as substantial, it nonetheless exists to a significant degree. The burden of pregnancy is obviously unique, however it could easily be inferred from the Court's statement that their concerns over bodily integrity were non-existent for women undertaking IVF.

A series of blood tests and ultrasound examinations are required to identify when ovulation occurs and the best time carry out oocyte retrieval. This is an invasive procedure involving insertion of a long needle into the ovaries often performed by surgery under general anaesthetic.[112] Ms Davis was anaesthetised five times for this procedure.[113] If oocyte retrieval is carried out by conscious sedation, pain levels will be higher,[114] to such a level that patients describe it as 'excruciatingly painful' and 'agony'.[115] Use of analgesics to relieve the pain of oocyte retrieval may depress the central nervous system, and undermine respiration and circulation.[116] Oocyte retrieval carries risks of infection,[117] pelvic ab-

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110 *Davis v Davis* (1992) 601 (Daughtrey J).

111 ibid 601 (Daughtrey J) (emphasis added).

112 University Hospitals Coventry and Warwickshire, 'IVF'. Available at <www.uhcw.nhs.uk/ivf/treatments/ivf/> (accessed 12 April 2019).

113 *Davis v Davis* (1992) 592.

114 I. Kwan et al, 'Conscious Sedation and Analgesia for Oocyte Retrieval during IVF Procedures: A Cochrane Review' (2006) 21(7) Human Reproduction 1672, 1677. However, an exception to this study is that abdominal pain was significantly lower in those receiving conscious sedation as opposed to general anaesthesia according to I Ben-Shlomo, 'Midazolam/Ketamine Sedative Combination Compared with Fentanyl/Propofol/Isoflurane Anaesthesia for Oocyte Retrieval' (1999) 14(7) Human Reproduction 1757.

115 S Franklin, *Embodied Progress: A Cultural Account of Assisted Conception* (Routledge 1997) 119.

116 Analgesics such as opiates can be used. Academy of Medical Royal Colleges, 'Safe Sedation Practice for Healthcare Procedures' (2013) 23. Available at <www.aomrc.org.uk/wp-content/uploads/2016/05/Safe_Sedation_Practice_1213.pdf> (accessed 12 April 2019). Earlier version cited in I. Kwan et al, 'Pain Relief for Women undergoing Oocyte Retrieval for Assisted Reproduction', *The Cochrane Collaboration* (2013). Available at <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004829.pub3/pdf> 1ff (accessed 12 April 2019).

117 Klemetti et al, 'Complications of IVF and Ovulation Induction' (2006) 3297. Risks of pelvic infection are documented in A Sarhan and S Muasher, 'Surgical Complications in IVF' (2007) 12(1) Middle East Fertility Society Journal 1.

scess,[118] bowel injury (although much rarer),[119] bleeding,[120] and torsion.[121] IVF also carries risks of acute abdomen complications.[122] These factors must all be considered as potentially forming part of the detriment and they are risks that only the woman faces when being treated for IVF.

There are also increased risks of miscarriages and/or pregnancy difficulties,[123] such as pre-eclampsia,[124] antepartum and postpartum haemorrhage[125] and gestational diabetes[126] and severe maternal morbidity.[127] In *Kass*, the wife, Ms Kass, suffered a miscarriage followed by an ectopic pregnancy which had to be surgically terminated.[128] The Court of Appeals of the State of New York did not consider this at any point in their judgment, and it is submitted these significant medical episodes in Ms Kass's attempts to produce a child for herself and her then husband should have been taken into account as detriment.

The entire IVF procedure can be more stressful for the female gamete provider than the man,[129] and women have 'more and different risk factors for developing emotional problems during and after treatment than their part-

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118 Sarhan and Muasher, 'Surgical Complications in IVF' (2007) 2.

119 ibid 3.

120 ibid.

121 'Superovulation protocols used in IVF lead to transiently enlarged, multicystic ovaries that are at risk for torsion. Gonadotropin stimulation followed by human chorionic gonadotropin can enlarge the ovaries to two to four times the normal size even after follicular aspiration ... The risk rises even further for those patients who develop ovarian hyperstimulation syndrome'. ibid 4. A 16% incidence of torsion has also been reported after gonadotropin intake (which are gonad-stimulating hormones). S Mashiach et al, 'Adenxal Torsion of Hyperstimulated Ovaries in Pregnancies after Gonadotropin Therapy' (1990) 53 Fertility and Sterility 76.

122 H Tsai et al, 'Acute Abdomen in Early Pregnancy due to Ovarian Torsion Following Successful In Vitro Fertilization Treatment' (2015) 54(4) Taiwan Journal of Obstetrics & Gynecology 438.

123 L Schieve et al, 'Spontaneous Abortion among Pregnancies Conceived Using Assisted Reproductive Technology in the United States' (2003) 101 Obstetrics & Gynecology 959; Z Veleva et al, 'High and Low BMI Increase the Risk of Miscarriage after IVF/ICSI and FET' (2008) 23(4) Human Reproduction 878.

124 N Wannabe et al, 'Is In Vitro Fertilization Associated with Preeclampsia? A Propensity Score Matched Study' (2014) 14 BMC Pregnancy Childbirth 69.

125 L Nyfløt et al, 'Risk Factors for Severe Postpartum Hemorrhage: A Case-Control Study' (2017) 17 BMC Pregnancy Childbirth 17.

126 M Szymanska et al, 'Gestational Diabetes in IVF and Spontaneous Pregnancies' (2011) 32(6) Neuro Endocrinology Letters 885.

127 C Belanoff et al, 'Severe Maternal Morbidity and the Use of Assisted Reproductive Technology in Massachusetts' (2016) 127(3) Obstetrics & Gynecology 527.

128 *Kass v Kass* 91 NE 2d 554 (NY 1998) 558.

129 H Klonoff-Cohen et al, 'A Prospective Study of Stress among Women undergoing In Vitro Fertilization or Gamete Intrafallopian Transfer' (2001) 76(4) Fertility and Sterility 675; I Laffont and R Edelmann, 'Psychological Aspects of In Vitro Fertilization: A Gender Comparison' (1994) 15(2) Journal of Psychosomatic Obstetrics & Gynecology 85.

ners.'[130] Women undergoing IVF were also found to be at particular risk for a variety of sexual problems, [131]which 'may markedly impact intimate relationships as well as overall quality of life'.[132] In general, it has been suggested that the state of infertility affects women during and after IVF treatment more than men in terms of quality of life.[133] Adverse effects such as dizziness, rashes and bleeding may continue for months after treatment has been concluded.[134] One of the most comprehensive studies on IVF concluded that the maternal mortality rate in IVF pregnancies was higher in Holland than in the general Dutch population.[135]

None of these risks and burdens of IVF were considered in *Evans, Kass or Davis*. They were, however, raised in *Nahmani,* where dissenting judge, Zamir J, was refreshingly candid about his lack of knowledge:

Indeed, there is no doubt that the medical treatment which Ruth underwent was much more difficult than the medical treatment that Daniel underwent. However, is the medical treatment that was carried out in the past the criterion that should decide the case, as opposed to, for example, the suffering of each party on an aggregate over time? But which of the parties will, on aggregate, suffer more? To this question I have no answer. At most, I can guess how I would feel and how much I would suffer were I in Daniel's position or in Ruth's position.[136]

Zamir J's honest disclosure points to the fact that the courts, in general, should take into account the type of aforementioned analysis which informs about the female's position, and the notion of detriment in estoppel provides a useful avenue for this. The majority in *Nahmani* however did consider some of the burdens mentioned as part of their judgment. Bach J mentioned the serious physical suffering Ms Nahmani underwent as well as a risk to her life

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130 A Huppelschoten et al, 'Differences in Quality of Life and Emotional Status between Infertile Women and Their Partners' (2013) 28(8) Human Reproduction 2168, 2172.

131 N Smith et al, 'Sexual Function and Fertility Quality of Life in Women Using In Vitro Fertilization' (2015) 12 The Journal of Sexual Medicine 985, 991.

132 ibid 992.

133 Huppelschoten et al, 'Differences in Quality of Life and Emotional Status between Infertile Women and Their Partners' (2013) 2171.

134 Rowland, *Living Laboratories* (1992), 59.

135 Braat et al, 'Maternal Death Related to IVF in the Netherlands 1984–2008' 1785. See also A Venn et al, 'Mortality in a Cohort of IVF Patients' (2001) 16(12) Human Reproduction 2691. Other side effects of the drugs may include hot flushes, feeling down or irritable, headaches, restlessness, shortness of breath, abdominal bloating, nausea and vomiting. NHS Choices, 'Risks of IVF'. Available at <www.nhs.uk/Conditions/IVF/Pages/Risks.aspx> (accessed 10 March 2019).

136 *Nahmani v Nahmani* [1995-96] 155 (Zamir J).

due to the treatment.[137] Mazza J recognised that in order for Ms Nahmani to be placed in the same position she would have to undergo 'great physical and emotional suffering'.[138] Ms Nahmani specifically consented to this suffering on a certain basis, as Tal J enunciates: 'we are speaking of a man who gave his consent, and in reliance on this the woman consented to interference in her body and painful treatments, and also adversely and irrevocably changed her position'.[139] Such an appreciation of the burden the woman faced in the context of her reliance was lacking in *Evans* and the other international cases mentioned, and should be conclusive in supporting her desire to receive the end-product of her treatment: implantation.

Detriment can also include meanings that involve burdens other than invasive treatment or a risk of physical harm for the woman, and one of those will now be explored.

Foregone Work

The portrayal of women as unique reproductive labourers in IVF lends itself to allowing their labour to be considered detriment. Whether or not the representation of women in this fashion is plausible, courts should also be persuaded that work foregone also constitutes detriment, which will now be described. The course of IVF, which may take many years, can significantly undermine a woman's aspirations for work, a certain lifestyle and social opportunities.[140] This might be compared to a typical proprietary estoppel case in which the deceased had repeatedly promised his son that he would inherit property to live in, it was considered unconscionable to deprive the son of his reasonable expectations based on the promises despite the terms of the deceased's will.[141] Kaye QC considered that the son had 'positioned his whole life on the basis of the assurances given to him and reasonably believed by him'[142] as sufficient detriment. It is difficult to show that IVF treatment involves a repositioning of the *whole* of the woman's life. Nonetheless, what Franklin's interviews indicate is that the course of IVF can change the patient's life.[143] Clearly,

137 ibid 95.
138 ibid 114.
139 ibid 43.
140 Peddie, Van Teijlingen and Bhattacharya, 'A Qualitative Study of Women's Decision-Making at the End of IVF Treatment (2005) 1944.
141 *Suggitt v Suggitt & Another* [2012] EWCA Civ 1140.
142 *Suggitt v Suggitt* [2011] EWHC 903 (Ch) [59]. This decision was upheld at appeal. *Suggitt v Suggitt & Another* [2012] [39].
143 Franklin, *Embodied Progress: A Cultural Account of Assisted Conception* (1997) 129ff.

the longer the patient has been receiving treatment, the more likely Kaye QC's aforementioned *ratio* will be relevant. For frozen embryo disputes the length of treatment is often over twelve months, not an insignificant amount of time.

In *Gillett v Holt*[144] foregone education and work experience counted towards detriment.[145] In another case of proprietary estoppel, *Greasley v Cooke*,[146] a maid servant acted to her detriment as she looked after two people in a house, when 'she might have left and got a job elsewhere'.[147] However, in *Coombes v Smith*[148] a plaintiff seeking a property interest could not claim that pregnancy and giving birth constituted detriment.[149] The issue here however was that the plaintiff had not acted in reliance on the assurance made to her.[150] If she had acted in reliance, it is possible the High Court would have been more disposed to find detriment. If this interpretation of the judgment is not accepted, Wilken and Ghaly have nonetheless argued that *Greasley* is to be preferred over *Coombes* since the former case is a decision from a higher court and the defendant in *Coombes* provided significant financial assistance to the plaintiff.[151] However, even though such benefits might be taken into account to consider whether 'net hardship'[152] had occurred, it would be unlikely that any financial assistance the male gamete provider had given to the female could be determinative. The 'minimum equity to do justice'[153] is necessary, and this can only mean a decision over the fate of the embryos.

Although none of the detriments of a pregnancy with the frozen embryos in question will be factored into an estoppel argument, nonetheless, in her pursuit of IVF she had laid herself open to the risks of pregnancy. This point

144 [2001] Ch 210.

145 The 'change of position' doctrine was available to proprietary estoppel and other forms of estoppel. [2001] Ch 210, 233-235 (Robert Walker LJ).

146 1 WLR 1306 (CA), 1306.

147 ibid 1312 (Lord Denning MR).

148 *Coombes v Smith* [1986] 1 WLR 808 (Ch). Mrs Coombes and Mr Smith began a romantic relationship, whereby he purchased a house with the intention for them to live together. She became pregnant with his child and moved into the house. Mr Smith did not move into the house but visited regularly. Mr Smith then sold this house and bought another, which Mrs Coombes moved into, and redecorated. After the relationship broke down she claimed an interest in the house.

149 ibid 820 (Parker QC).

150 'The first act relied on by the plaintiff is allowing herself to become pregnant by the defendant. In my judgment, it would be wholly unreal, to put it mildly, to find on the evidence adduced before me that the plaintiff allowed herself to become pregnant by the defendant in reliance on some mistaken belief as to her legal rights' (ibid Parker QC).

151 Wilken and Ghaly, *The Law of Waiver, Variation and Estoppel* (2012), 242; *Coombes v Smith* [1986] 811.

152 ibid 242.

153 *Crabb v Arun District Council* [1976] EWCA Civ 7 179 (CA) 198 (Scarman LJ).

is made by Tracy Pachman, as part of an argument that with or without IVF, 'women overwhelmingly bear the responsibility of care, including emotional, psychological, and financial support' of the fetus and children born.[154] This argument is reminiscent of proprietary estoppel cases in which a person takes on responsibilities in the anticipation of receiving a future reward. However, if the couple plan to use a surrogate, as in *Nahmani*, then this point is less relevant as the woman will not carry the burdens of pregnancy.

Detriment of (Repeated) Failed IVF Cycles

The aforementioned factors which may disadvantage women may need to be multiplied a number of times for failed IVF cycles, which in some cases can reach double figures.[155] For certain factors, the detriment increases at an accelerating rate with each failed cycle. Repeated failures can lead to higher rates of thrombophilia in women,[156] which in some cases may be significantly higher, as noted by Hussein Qublan: 'Combined thrombophilia (two or more thrombophilic factors) was significantly higher in women who have had repeated IVF failure as compared with the two control groups'.[157]

It is worthwhile considering early yet pertinent empirical research from Lene Koch exploring how women felt about their third and final publicly funded IVF cycle drawing to a close (regardless of whether treatment was successful).[158] The language used by female participants in Koch's study is striking: 'Liberation', 'peace of mind', and 'great relief are the expressions that the women use to characterise the situation when IVF will be ended definitively'.[159] Such emotional distress is not *per se* likely to be construed as detrimental reliance in an estoppel

154 T Pachman, 'Disputes over Frozen Preembryos & the "Right Not to Be a Parent"' (2003) 12 Columbia Journal of Gender and Law 128, 148.

155 D Ryley et al, 'Characterization and Mutation Analysis of the Human FORMIN-2 (FMN1) Gene in Women with Unexplained Infertility' (2005) 83(5) Fertility and Sterility 1363, 1365; A Kuczynski, 'Her Body, My Baby' *The New York Times* (New York, 30 November 2008). Available at <www.nytimes.com/2008/11/30/magazine/30Surrogate-t.html?_r=0> (accessed 9 February 2019). One report investigated a medical procedure on 7 women with infertility problems, 5 of which had a history of 15 failed IVF cycles. E Mor, M Landay and R Paulson, 'Endometrial Receptivity is Preserved in Diethylstilbestrol-Associated and Other Müllerian Anomalies: Evidence from Tubal Embryo Transfer' (2009) 26(1) Journal of Assisted Reproduction and Genetics 65.

156 F Azem et al, 'Increased Rates of Thrombophilia in Women with Repeated IVF failures' (2004) 19(2) Human Reproduction 368.

157 H Qublan et al, 'Acquired and Inherited Thrombophilia: Implication in Recurrent IVF and Embryo Transfer Failure' (2006) 21(10) Human Reproduction 2694.

158 L Koch, 'IVF- an Irrational Choice' (1990) 3 Reproductive and Genetic Engineering: Journal of International Feminist Analysis 1.

159 ibid 7.

case in the UK, even though it has been referred to by psychologists as involving 'detrimental consequences',[160] since there is a lack of precedent to support this view. Even in the US it can be noted that the courts have rejected claims based on emotional distress.[161]

Detriment for Older Women

For the gamete provider seeking implantation, a significant period of time may pass if he or she awaits legal resolution and seeks reproductive opportunities with other embryos. This passage of time may implicate women with greater physical risks, meaning detriment may be more relevant for older women. The difficulties of identifying an age which could be identified as 'mature' for a woman, in that IVF and/or other reproductive options will be significantly reduced has already been alluded to.[162] Though not all frozen embryo disputes will involve the female gamete provider's last chance of pregnancy with her own genetic offspring dependent on implantation of the embryos in contention (as in *Evans*), a delay in pursuing treatment may regardless have a detrimental effect on women since many enter IVF knowing it is their 'last resort in the attempt to have a child'.[163] This is in part because older women face reduced reproductive possibilities, and as such any further delays they face will be potentially detrimental.[164] Fertility especially declines from the late 20s[165] due to a decreased probability of conception and increased probability that a

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160 Qublan et al, 'Acquired and Inherited Thrombophilia: Implication in Recurrent IVF and Embryo Transfer Failure (2006) 2694.

161 In the USA, a case seeking damages for resulting from breach of an oral promise not to view a videotape with a sexual encounter, recovery for damages for emotional distress based on promissory estoppel was not allowed unless an independent tort could be established. *Deli v University of Minnesota* 578 NW2d 779 (Minn Ct App 1998). Similar decisions have been reached in other states. *Wright v Schwebel Baking Co*, 4475 (Ohio 2005) [38]; *Nancy Weible v University of Southern Mississippi and Dr Jane Siders* 00442 (MS Supreme Ct 2011) [40].

162 A Chrysanthou, 'Reliance and Representations/Promises in Frozen Embryo Disputes: UK and Israeli Approaches to Estoppel' 52.

163 Franklin, *Embodied Progress: A Cultural Account of Assisted Conception* (1997) 121.

164 The gender distinction between reduced reproductive potential begins at birth: 'A woman is born with all the oocytes she will ever have, with estimates varying from 400 000 to 2 x 106... Of these, only ~ 400 will be subject to ovulation during an average female's reproductive life. Contrary to this, with 1% of the supply of sperm created within a man each day, the entire stock of some billions of sperm can be replaced in < 4 months...'. H Klonoff-Cohen, 'Female and Male Lifestyle Habits and IVF: What is Known and Unknown' (2005) 11(2) Human Reproduction Update 180. In general, reproductive potential gradually decreases from the age of 24 according to the largest study to date in the USA. D Seifer, V Baker and B Leader, 'Age-Specific Serum Anti-Müllerian Hormone Values for 17,120 Women Presenting to Fertility Centers within the United States' (2011) 95(2) Fertility and Sterility 747, 747-50.

165 D Dunson, B Colombo and D Baird, 'Changes with Age in the Level and Duration of Fertility in the Menstrual Cycle' (2002) 17(5) Human Reproduction 1399. This study particularly shows that fertility significantly declines after 27 by using a Bayesian statistical approach.

pregnancy will terminate after conception or implantation.[166] The likelihood of IVF success also decreases with age.[167] With respect to funding, NICE guidelines state that IVF funding should be restricted to women aged 23 to 39.[168] Ruth Colker argues that it is accordingly false to equate women's reproductive capacity with men's, and that it is 'important for courts to be aware of these gender-specific implications when they decide cases involving reproductive choices'.[169]

Applying Colker, it is noteworthy older women are specifically more at risk of venous thrombosis should they pursue IVF.[170] Women over the age of 35 who become pregnant face increased risks of gestational diabetes, placenta praevia, emergency caesarean section, postpartum haemorrhage and delivery before 32 weeks of gestation.[171] A recent Swedish study also found that women over the age of 30 'revealed significantly increased risk of prematurity, perineal lacerations, preeclampsia, abruption, placenta previa, postpartum haemorrhage and unfavourable neonatal outcomes' compared to younger women.[172] Consideration of the aforementioned risks will be relevant for majority of female patients given that the average age of treatment in the UK is 35.5,[173] a trend that is increasing for both reproduction by IVF[174] and sexual intercourse.[175] Consideration should also be given to findings that there is a decline in not only egg

166 E Velde and P Pearson, 'The Variability of Female Reproductive Ageing' (2002) 8(2) Human Reproduction Update 141, 142.

167 R Jones and K Lopez, *Human Reproductive Biology* (4th edn, Academic Press 2014) 293.

168 NICE Clinical Guideline 156, *Fertility: Assessment and Treatment* (2013) [1.11.1.3]. Available at <www.nice.org.uk/guidance/cg156/resources/fertility-problems-assessment-and-treatment-35109634660549> (accessed 3 May 2019).

169 R Colker, 'Pregnant Men Revisited or Sperm is Cheap, Eggs are Not' (1996) 47 Hastings Law Journal 1063, 1074.

170 F Anderson and F Spencer, 'Risk Factors for Venous Thromboembolism' (2003) 107(23) Circulation I9-16.

171 M Jolly et al, 'The Risks Associated with Pregnancy in Women Aged 35 years or Older' (2000) 15(11) Human Reproduction 2433, 2433-37.

172 M Blomberg, R Tyrberg and P Kjølhede, 'Impact of Maternal Age on Obstetric and Neonatal Outcome with Emphasis on Primiparous Adolescents and Older Women: A Swedish Medical Birth Register Study' (2014) 4(11) *BMJ Open* 5840.

173 Human Fertilisation & Embryology Authority, 'Fertility Treatment 2014-2016 Trends and Figures', 9. Available at <www.hfea.gov.uk/media/2563/hfea-fertility-trends-and-figures-2017-v2.pdf> (accessed 12 July 2019).

174 ibid.

175 The average age of mothers in 2017 was 30.5 years, up from 30.4 years in 2016 and 26.4 years in 1975. Office for National Statistics, 'Statistical Bulletin: Births in England and Wales, 2017: Statistical Bulletin'. Available at: <www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthsummarytablesenglandandwales/2017> (accessed 12 July 2019).

quantity[176] but also quality[177] with maternal age. As mentioned above, since Ms Evans was 29 at the time of treatment[178] these issues were of moderate relevance, but that does not undermine the overall argument over the importance of gender in IVF. Although one might argue that a woman, for example, in her early 20s might not face the same aforementioned burdens, it would be unjust to recognise detrimental reliance only for women over a certain age, since the very reason couples usually seek IVF is due to reproductive complications. Nonetheless, this motivation does not negate that burdens exists which should be taken into account for the purposes of detriment.

Detriment to the Male Gamete Provider Seeking Implantation

The detriment to the male gamete provider seeking implantation will now be analysed. Though the male gamete provider may share some of the financial costs and distress of IVF, the relative ease of sperm donation on his part is normally in stark contrast to the physical and psychological and burdens borne by the female gamete provider during IVF treatment. The financial costs she will face will on average be higher due to absence from work.[179] However, as two obstetricians once pointed out, 'the man, after being almost ignored for many years, can now share with his partner the various invasive medical techniques which may be proposed'.[180] In the cases in which there is no sperm in the male's ejaculate, a testicular biopsy may be required to retrieve sperm.[181] An NHS website advised the procedure requires light general anaesthetic combined with local anaesthetic.[182] Two medical researchers considered

176 L Fong et al, 'Anti-Müllerian Hormone: A Marker for Oocyte Quantity, Oocyte Quality and Embryo Quality?' (2008) 16(5) Reproductive Biomedicine Online 664.

177 ibid; E Fragouli, D Wells and J Delhanty, 'Chromosome Abnormalities in the Human Oocyte' (2011) 133(2-4) Cytogenetic and Genome Research 107; Y Bentov and R Casper, 'The Aging Oocyte – Can Mitochondrial Function be Improved?' (2013) 99(1) Fertility & Sterility 18-22. 'The loss of oocyte quality is believed to be the result of an increase in meiotic nondisjunction, leading to an increasing rate of aneuploidy in the early embryo at higher female ages'. F Broekmans et al, 'Female Reproductive Ageing: Current Knowledge and Future Trends' (2007) 18(2) Trends in Endocrinology and Metabolism 58.

178 *Evans v Amicus Healthcare Ltd* [2004] [4].

179 K Hammarberg, J Astbury and H Baker, 'Women's Experience of IVF: A Follow-up Study' (2001) 16(2) Human Reproduction 374, 378.

180 F Olivennes and R Frydman, 'Friendly IVF: The Way of the Future?' (1998) 13(5) Human Reproduction 1121.

181 ibid.

182 University Hospitals Coventry and Warwickshire, 'Surgical Sperm Retrieval (SSR)'. Available at <www.uhcw.nhs.uk/ivf/treatments/ssr> (accessed 5th August 2018).

risks of vascular injuries[183] and inflammation,[184] but in their own study of 62 patients undergoing testicular biopsy, 'no acute perioperative complications' were detected.[185] Inflammation and/or haematoma was observed at 3 months afterwards at the biopsy site, but by 6 months had resolved.[186] This indicates that for some men, detriment for physical factors may be present, but will normally be significantly less than for women.

Fertility treatment for men, as with women, may begin before IVF. Testosterone replacement therapy carries a higher risk for men of the development of coronary heart disease than women,[187] as well as risks of sleep apnoea[188] although this study also indicates varied health benefits for men as a result of normalising levels of the hormone.[189] As with the female, hormonal treatment with gonadotropin also might be necessary for an infertile male, although there appears to be no documented risks associated with men taking this drug.

Potential issues beyond the direct physical burdens of the medical treatment may also be considered. The notion that IVF treatment as reproductive labour is analogous to work was addressed in the previous section, and there is limited scope to apply this notion here. Men may feel obligated to eat better in order to produce better quality sperm.[190] However, the level of responsibility they need to exercise over their bodies is not relevant once sperm donation has occurred, unless future cycles are considered possible, meaning that it is much more difficult to show that significant reproductive labour has been carried out by the male in this sense. He may be able to show reproductive labour in terms of any time and expense invested in assisting the female pursuing treatment, or as in the case of *Nahmani*, helping in the selection of a surrogate.[191] In this case there was an arduous process involving three years of significant economic

183 P Schlegel and L. Su, 'Physiological Consequences of Testicular Sperm Extraction' (1997) 12(8) Human Reproduction 1688.
184 ibid 1689.
185 ibid.
186 ibid 1691.
187 E Nieschlag et al, 'Testosterone Replacement Therapy: Current Trends and Future Directions' (2004) 10(5) Human Reproduction Update 409, 413.
188 ibid 416.
189 'Testosterone therapy normally results in improvements in mood and well-being and thereby results in an improved quality of life'. ibid 416. 'It is generally well accepted that restoring testosterone levels to the normal range will improve quality of life parameters in the long term and will provide a range of benefits to muscle, bone and other testosterone-dependent functions'. ibid 471.
190 M Vujkovic et al, 'Associations between Dietary Patterns and Semen Quality in Men Undergoing IVF/ICSI Treatment' (2009) 24(6) Human Reproduction 1304.
191 *Nahmani v Nahmani* [1995-96] 52.

and legal obstacles.[192] This expense is not atypical, illustrated by a survey of 332 couples in the US which found that those treated with IVF spent a median of $19,234.[193]

This section has shown that detriment may exist to the man seeking implantation, but in most cases it is significantly less than then woman's detriment.

Detriment to Gamete Providers not Seeking Implantation

In a similar manner to that mentioned above, estoppel might arise if the law or the contract (assuming there is one) were silent on the fate of the embryos if consent were varied, or if the law or contract provided a veto to the male gamete provider seeking implantation. It may also be raised as a counterclaim to the estoppel argued by this gamete provider.[194] Detriment would not be so significant for the female not seeking implantation for two reasons. First, she would not be able to rely on the loss of opportunity for genetic parenthood through use of the embryo(s) in question. Second, it would be more difficult to link the treatment she had received to her wish to not have the embryo implanted because the purpose of the treatment was to have a child. Authority from proprietary estoppel cases would be lacking, since there would be no property for the representee to inherit. However, the detriment that would flow from the representor resiling on a promise that she would, for example, destroy the embryos would be unwanted parenthood.

If detriment could be judged from the moment at which the representor does go back on his or her promise, then any anguish the gamete provider not seeking implantation suffers as a result of the knowledge that she will become an unwanted parent might be taken into account as part of the 'cumulative effect' of the claim of the gamete provider not seeking implantation on the 'conscience' of the gamete provider seeking implantation.[195] This may be relevant for men as well. For the man not seeking implantation, there would be no detriment

192 ibid c52-3.

193 Alex Wu et al, 'Out-of-Pocket Fertility Patient Expense: Data from a Multicenter Prospective Infertility Cohort' (2014) 191(2) The Journal of Urology 427, 429.

194 A counterclaim of estoppel against a claim of estoppel is unusual. For an example of such a counterclaim in estoppel see *Mohammed Ghadami v Donegan* [2014] EWHC 4448 (Ch).

195 *Gillett v Holt* [2001].

beyond that which faces the female. Craig Lind sums up the issue, 'Men have the easier option to walk away from it'.[196]

Conclusions on Estoppel

The elements Panitch first identified have been elaborated and analysed in a discussion of estoppel. The analysis provided from case law and empirical studies strongly support her argument that the greater injustice would be to deny implantation to the spouse who detrimentally relied on the other's words and conduct. A representation that IVF treatment should be pursued with the aim of implantation, which can be shown was reasonably relied upon to pursue a course of IVF treatment, should especially allow for estoppel to arise for a female gamete provider due to her greater detriment.[197]

Estoppel clearly draws out the gendered distinctions in IVF relating to the investment of the gamete providers' bodies. Specifically, it distinguishes a female gamete provider from a male gamete provider in terms of detriment. Furthermore, it distinguishes a female gamete provider seeking implantation from a female gamete provider not seeking implantation on the basis of detrimental reliance. The result is that the female gamete provider seeking implantation has by far the strongest position in an estoppel case. None of the conditions of estoppel are mutually exclusive,[198] and gender factors are therefore relevant for all of them. Specifically, a greater appreciation of the role of detriment shows that estoppel should be more readily available for the female who has begun receiving treatment for IVF. The old adage runs that hard cases make bad law,[199] but frozen embryo disputes, which have been exemplified as the 'hardest of cases' [200] can also 'test the law'[201] and 'make revealing law';[202] and one aspect they can reveal is the inequity of failing to recognise the detriment to the woman in these disputes.

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196 C Lind, 'Evans v United Kingdom—Judgments of Solomon: Power, Gender and Procreation' (2006) 18(4) Child and Family Law Quarterly 576, 589.

197 In the UK, to prevent a gamete provider from varying his or her consent for the use of the embryos would require amendment of Schedule 3 of the 1990 Act. For a discussion on this see, Chrysanthou, 'Reliance and Representations/Promises in Frozen Embryo Disputes: UK and Israeli Approaches to Estoppel'.

198 *Gillett v Holt* [2001] 225 (Robert Walker LJ).

199 *R v General Medical Council, ex parte Colman* [1990] 1 All ER 489 (CA) (Civ) 511 (Lord Donaldson).

200 M Pieper, 'Frozen Embryos - Persons or Property: Davis v Davis' (1990) 23 Creighton Law Review 807.

201 B Schroeder, 'Damn the Contract, I Want to Use the Embryos' (*Schiller, DuCanto & Fleck LLP*). Available at <www.familylawtopics.com/2015/05/damn-contract-want-use-embryos/#more-1511> (accessed 4 January 2019).

202 M Pieper, 'Frozen Embryos - Persons or Property: Davis v Davis' (1990).