Introduction

I.1 Background

In 1978, Louise Brown was the first child to be born through *in vitro* fertilisation (IVF).[1] Since then, the embryo *in vitro*, born from an assemblage of biological and technological matters, has generated complex ontological and moral questions for the law. As medical science marches forward, commonly held constructions of the embryo are becoming increasingly problematic. The physical contexts in which the embryo can exist are growing and changing, as are its possible *teleologies*.[2] The politics of fertility have been extended to new heights[3] with the harnessing, control, and enhancement of reproductive genetic procedures in the biotechnology industry. 'The embryo' – and the legal, moral, and social connotations surrounding it – is not the same 'embryo' it was over 30 years ago.

The Human Fertilisation and Embryology Act 1990 (the 1990 Act) is the key piece of legislation on the embryo *in vitro* in the United Kingdom. Yet, because of the changes and opportunities facilitated by the 1990 Act, reproduction and research have been defined and redefined,[4] in legal, cultural, social, political, and even economic senses. Arguably, its influence on our spheres of understandings in this domain can be grouped under three broad headings:

1. On the embryo *in vitro* itself
2. On science (persons and practices, e.g. research practices and researchers)

[1] The procedure whereby an egg is fertilised by a sperm outside of the body.
[2] For the purposes of this book, this term is used to highlight the reproductive and research ends for regulated embryos *in vitro*. This is discussed in detail in Chapter 6.
[3] S. Franklin, 'Postmodern Procreation: A Cultural Account of Assisted Reproduction' in F. Ginsburg and R. Rapp (eds.), *Conceiving The New World Order: The Global Politics of Reproduction* (University of California Press, 1995), 326.
[4] Ibid.

3. On the family (in the broadest sense, e.g. donors, potential parents, hypothetical mothers, and hypothetical children).

The regulation of emerging technologies may be described as the governance of processes in persistent flux, and in some cases, it is the regulation of what we do not yet know or fully understand. Reconciling process with progress, therefore, has not been easy. Nonetheless, the regulation of the embryo *in vitro*, and all the practices that law currently allows are, in essence, regulating for processes of change.[5] Considering that it has been over 30 years since the 1990 Act was passed in its original form, is it time to legally reconceive 'the embryo'?

This research was carried out as part of a five-year Wellcome Trust-funded interdisciplinary project entitled 'Confronting the Liminal Spaces of Health Research Regulation'[6] and seeks to explore the ways in which UK law engages with embryonic processes and the scientific processes to which *in vitro* embryos are subject. Embryos created *in vitro* sit at the core of modern reproductive and scientific life. They are uniquely transformative as regulated biological entities, and for that reason, they move between normative delineated legal spaces and beyond them – for example, from creation in the laboratory into the human gestational environment, or from creation in the laboratory to controlled destruction in that same sterile environment. Embryos' processual nature, for this book, lies in their growing, changing, and transforming nature.[7] Embryonic evolution is the most rapidly fluctuating biological process in human life. This complexity is mirrored in legal frameworks that are simultaneously detailed and ambiguous. In the eyes of the law that governs these entities – the 1990 Act (as amended) – embryos are neither subject (in a strict legal sense of being a legal person) nor mere object (in the strict sense of being only a 'thing'),[8] yet, as we will see, the self-same law often supports their treatment as both at the same time.

More granularly, in this book it is argued that in regulating this processual, *liminal* entity, law is regulating for uncertainty. The analysis in this book assesses the extent to which law incorporates and makes use

[5] S. Taylor-Alexander and others, 'Confronting the Liminal Spaces of Health Research Regulation: Beyond Regulatory Compression' (2016), *Law, Innovation and Technology*, 8(2), 149–176.

[6] Award No: WT103360MA.

[7] S. Gilbert, 'An Introduction to Early Developmental Processes' in S. Gilbert *Developmental Biology* (6th ed., Sinauer Associates, 2000).

[8] M. Fox, 'Pre-persons, Commodities or Cyborgs: The Legal Construction and Representation of the Embryo' (2000), *Health Care Analysis*, 8(2), 171–188.

of embryonic ontological boundaries. In Part I, this work calls particular attention to the legal boundedness of embryos *in vitro,* which, it is argued, are in contrast to the processes it leads embryos through. To explain, 'legal boundedness' here refers to law's tendency to put the objects of its regulation in 'silos', which can result in 'largely disconnected ecosystems'.[9] It is argued that this has contributed to a 'legal gap' between the conceptual basis of the 1990 Act (as amended) and the 'pathways' it has made available to the embryo.

Further, the analysis in this book claims that embryo regulation, as it stands, is ill equipped to deal with the multifaceted, relational[10] nature between embryos *in vitro* and the variable contexts and processes that the law takes the embryo *into, through*, and *out* of. This work thus calls for, and considers, the basis for a more coherent and robust intellectual defence of the ways in which we justify the different manners in which law treats different types of embryos created purposively towards different ends. The main questions that this book seeks to answer are the following: overall, does law reflect and embody processual regulation, if so, what does this look like? And if not, what form could it take if reform were thought to be desirable?

I.2 Analytical Framework

In order to answer the aforementioned question, a socio-legal analysis is employed that draws on the above-mentioned anthropological concept of 'liminality'. The term, coined by anthropologist Arnold Van Gennep,[11] may be described as being concerned with the spaces *in between* distinct stages of human experience, or with the *process* of transition between such stages. It is often utilised to understand, and examine, those who occupy and often transgress delineated spaces; it is inherently concerned with better comprehension of the processual nature of *becoming*. This analysis, which seeks to understand these processes, thus employs the concept of liminality in order to explore how we can apprehend legal process and legal regulation more deeply with respect to embryos that are created to become particular types of

[9] G. Laurie, 'Liminality and the Limits of Law in Health Research Regulation: What Are We Missing in the Spaces In-between?' (2017), *Medical Law Review*, 25(1), 47–72, 50.
[10] Relational to persons who create, use, and gestate them. Discussed further in Chapters 6 and 7.
[11] A. van Gennep, *The Rites of Passage* (University of Chicago Press, 1960).

entity, that is, a possible future person, or object of research, or possibly other ends.

To explain further, even though law has made considerable effort to clarify bio-ontological categories of being (e.g. distinguishing between gamete and embryo), these lines are still blurred. This blurring is demonstrated by ongoing debates, for example, concerning the nature, scope, and limits of embryo research, time limits on abortion, and indeed in UK and European Court of Human Rights (ECHR) case law about whether, when, and how protections might be given to the 'unborn'. A liminal lens emphasises the processual nature of biological growth in early human life – that is, a continuous process from conception to birth and beyond. Part of the problem for this analysis is, therefore, that there is a mismatch between present and evolving scientific and social understanding and legal approaches, when considered along ontological lines. This has significant moral and social implications, and thus begs a question about how well regulation in this area operates and whether it can, or should, be improved. Further, the tripartite liminal process (*into, through,* and *out*)[12] mirrors the process embryos go through under the 1990 Act (as amended). For example, embryos are led *into, through,* and *out* of research, the processes of which (especially 'through') may be prolonged by activities such as embryo freezing (see Figure 6.1).[13]

Overall, this lens enables thinking to move beyond purist legalistic approaches in a field that is especially non-legal. It implies that law requires more than legal reasoning to adequately reflect that which it regulates, especially when it comes to embryos. It also enables the analysis in this book to move *between* and *beyond* delineated legal spaces.

While liminality is central to this work, it is also argued that, as a lens, it does not wholly allow us to assess the *nature of*, and the *reasons for,* the 'legal gap' (identified in Part I). Building on the works of others,[14] it is argued that embryos *in vitro* fit well within a framing that has emerged in response to postmodern categorisations of the 'Other': principally, the

[12] Ibid, p. 21. Also see Chapter 6 of this book.
[13] See Figure 1, Chapter 6 of this book.
[14] Namely works by Mary Ford and Isabel Karpin. See M. Ford, 'Nothing and Not Nothing: Law's Ambivalent Response to Transformation and Transgression at the Beginning of Life' in S. Smith and R. Deazley (eds.), *The Legal, Medical and Cultural Regulation of the Body: Transformation and Transgression* (Routledge, 2009); I. Karpin, 'The Uncanny Embryos: Legal Limits to the Human and Reproduction without Women' (2006), *Sydney Law Review*, 28(4), 599–623.

'gothic'.[15] As a response to the 'Othering' of those who do not fall into law's liberalist norms (a sovereign, self-sufficient subject, or an object), a 'gothic' framing helps us to understand, more deeply, the embryo's uncertain nature, and law's responses to it therein.

I.3 Book Structure

This book has been divided into three parts: (1) *Into* Liminality, (2) *Through* Liminality, and (3) *Out* of Liminality. This division emphasises the embryonic processes that law begins, regulates, and ends, and further reflects the tripartite stages of van Gennep's processual understanding of human liminal experience.[16] The structure of this book, and each part, is briefly summarised next.

Part I

In Part I, 'Into Liminality', this work argues that the law governing embryo research and IVF has led the embryo *in vitro*, and itself (the law), *into* a form of (what this book diagnoses as) 'legal stasis'. It is important to note that this book begins with the premise of the embryo as a processual entity, rapidly transforming from one biological state to another. In other words, it is quintessentially *liminal*[17] (the meaning of which is discussed in Chapter 5). It is law's reflection of these processes, within its framework, that this book is interested in. It begins by asking: to what extent does law, in fact, reflect these processes?

Chapter 1 provides a doctrinal tracing of law's engagement with the embryo from its early construction in law to the modern day. It does so with a view to demonstrating law's evolution alongside scientific and societal understandings of the embryo. Notable from this legal history is the law's persistent efforts to engage with the uncertain, processual nature of the embryo. This chapter situates the embryo within its legal context by tracing the inception of 'the embryo' in law and the evolution of its regulation. It aims to show that throughout its relatively short legal

[15] See Chapter 4 of this book. Also see, for example: K. Hurley, *Gothic Body* (Cambridge University Press, 1996); V. Sage and A. L. Smith (eds.), *Modern Gothic* (Manchester University Press, 1996); F. Botting, *Gothic* (Routledge, 1996).
[16] See van Gennep, *Rites of Passage*.
[17] This framing of embryos has already been used in a different context, see S. Squier, *Liminal Lives: Imagining the Human at the Frontiers of Biomedicine* (Duke University Press, 2004).

history, the regulation of the early stages of human life has attempted (to one extent or another) to engage with the processual and uncertain nature of the early stages of human life. To this end, the chapter provides a doctrinal and analytical history of 'the embryo' in UK law. This analysis is important here, in order to show that process, in this context, matters for law-making. This framing also sets up Chapter 2's discussion of the contemporary context in which we regulate the embryo *in vitro* and serves as a stark counterpoint because, as will be shown in Chapters 2 and 3, the processual seems to be lost or overlooked today. The analysis in Chapter 2 also adopts a doctrinal approach to look at the embryo-in-law in the present day, the basis of which was set by the Warnock Report[18] and the 1990 Act (as amended). One of the primary ways in which the law has engaged with the embryo is through affording it an ethico-legal 'special status'.[19] The analysis in this chapter assesses current laws in relation to this, particularly regarding the law's engagement with embryonic processes. It finds that despite regulating a multiplicity of embryonic processes and pathways through the law (e.g. a 'research pathway', or a 'reproductive pathway'), all embryos are (at least per the intellectual basis of the 1990 Act) regulated under this singular 'special status'.

In Chapter 3 it is then argued, building upon critical literature on the regulated embryo, that in the context of the present day, the law is inadequately engaging with the embryo's uncertain, processual nature. More granularly, it explores the embryo *in vitro*'s fade from social and legal discourse. This has only intensified the confusion surrounding the 'special' legal status of the embryo, a status unclear in nature, source, and extent. Moreover, the analysis offered in this chapter highlights the temporally limited nature of law's boundary work[20] in this field. It is at this stage that this work makes a marked move from referring to 'the embryo' to referring to 'embryos' in order to reflect this multiplicity. Overall, the ossification of legal development in this area is diagnosed as a 'legal stasis'. It is argued that this is problematic because of what this book calls a 'legal gap' between the intellectual set-up of the 1990 Act and the processes that it regulates. The chapter finishes by asking two questions: (1) 'why might this be?' and (2) 'how might we move law past this stasis, assuming it is desirable to do so?'

[18] Report of the Committee of Inquiry into Human Fertilisation and Embryology (Cmnd 9314, 1984) (The Warnock Report).
[19] Ibid. 11.18.
[20] See Taylor-Alexander and others, 'Beyond Compression', 171.

Overall, the analysis from Part I reveals a clear juxtaposition between law, as an institution that creates clear-cut boundaries, and the embryo, as a processual, changing, and rapidly evolving liminal entity. This is not to say that the law is not processual to some extent, which in fact, as this part's analysis shows, it always has been. If process has always been central to law-making in this field, however, as the end of Chapter 3 argues, there is room for its further incorporation into our legal framework, again, assuming it is desirable to do so.

Part II

Part II, 'Through Liminality', explores a hitherto underexplored connection between a response to the postmodern that has emerged – namely, 'the gothic' – and the anthropological lens used in this book, that is, liminality. It builds upon previous analysis regarding the static nature of the regulation of the embryo *in vitro*. Chapters 4 and 5 aim to understand legal responses to embryos, and processual regulation therein, more thoroughly. This part's overarching question is thus: 'how can we understand legal process and legal regulation more deeply?'

With a view to better understanding the above-mentioned 'legal gap', characterised by uncertainty and caution, the analysis in Chapter 4 explores parallels that may be drawn between embryos and a concept that has evolved as a response to the 'Othering' of certain sectors of society: the 'gothic self'. This concept is closely linked to the 'monstrous' and explores the ways in which we respond to persons (and entities) that are not self-sovereign (something that law arguably presupposes). In exploring this framing, this analysis draws on the work of Mary Ford[21] and Isabel Karpin[22] and frames the regulated embryo *in vitro* as paradigmatic of 'the gothic', and emphasises the utility, for law, in recognising the parallels between this concept and embryos. It is argued that framing embryos *in vitro* as 'gothic' is undoubtedly useful for understanding the nature of, and the reasons for, our current regulatory framework more deeply. Nonetheless, it is also argued that, as a frame of analysis, 'the gothic' alone does not address the 'legal gap' fully. This is because it does not directly deal with understanding the dynamics of process in a deeper sense, which, as Part I shows, is required in order to answer its second question: (2) how might we move law past this 'stasis',

[21] See Ford, 'Nothing and Not-Nothing'.
[22] See Karpin, 'Uncanny Embryos'.

assuming it is desirable to do so? Chapter 4 thus leaves the question: how might we regulate embryos more processually?

In Chapter 5 the anthropological concept of liminality[23] is introduced and discussed, which – as already noted – is concerned with the dynamics of processes and states of in-betweenness. After Van Gennep developed liminality in the context of tribal societies, others, including Victor Turner,[24] have since built on this concept to encompass several dimensions within modern societies.[25] For this analysis, then, liminality can be used as a tool to help show us how law, along with the embryo, can emerge out of the regulatory purgatory they are in today. Indeed, current law may arguably be described as reflecting many of the major symptoms of 'permanent liminality',[26] a modern theory of liminality concerned with that which does not emerge out of the 'other side' of processes/change. It is argued that both embryos *in vitro* and the law that governs them have features of 'permanent liminality'. Finally, this analysis will draw on lessons from Chapter 4 in order to consider what 'the gothic' and liminality, combined, might tell us about how we can close the previously discussed 'legal gap'.

By the end of Part II, it is shown that there are ways that law can better (in terms of processuality) navigate and capture the contexts that it is leading the embryo *through*. Yet how can law better reflect the uncertain nature of embryonic processes and the technologies that create them? The answer to this is addressed in Part III.

Part III

In Part III, 'Out of Liminality', this research explores how lessons learned from a gothic analysis and a liminal lens (per Part II) may be taken from *conceptualisation to realisation*. It is argued that if the law were to take process seriously (as it has done in the past), and that if liminality teaches us about the permanent liminality of law in this area, then it is perhaps time for the law to explicitly recognise the separate contexts that it is leading the embryo *into, through,* and *out* of.

[23] See van Gennep, 'Rites of Passage'.
[24] V. Turner, *The Forest of Symbols: Aspects of Ndembu Ritual* (Cornell University Press, 1967).
[25] For example, see Squier, 'Liminal Lives'.
[26] Á. Szakolczai, 'Permanent (Trickster) Liminality: The Reasons of the Heart and of the Mind' (2017), *Theory and Psychology*, 27, 231–248.

Chapter 6 offers an exploration of what processual regulation *could* look like, as a framework for governing the use and production of embryos *in vitro*. Given that liminality, as a lens, enables us to understand more deeply the multiplicity of contexts in which embryos are used and created, it shall be argued that if law wants to continue accounting for process, as it has done in the past, then it might consider what this book calls a 'context-based approach'. This approach, which explicitly attempts to recognise the separate contexts that law is leading embryos *into, through,* and *out* of, is not prescribed per se but rather offered as a way of legally embracing a processual approach (if that is indeed what we want for law).

Finally, in Chapter 7, the broader implications that a context-based approach might have for three contemporary discussions surrounding recent advancements in science and technology are considered: *in vitro* gametogenesis (IVG), the fourteen-day rule, and partial ectogenesis via artificial womb technologies (AWTs). Importantly, the analysis offered in this chapter is not assessing what we *should* do, but what law *could* possibly do via this approach. It emphasises that the analysis of this book can *add* to legal, ethical, and social discussions about embryos *in vitro*.

I.4 Key Terms

'Embryo'

First, it is important to acknowledge the undecidable, unknowable nature of 'the embryo' (or 'embryos') in definitional terms. There is undoubtedly some disparity within scientific communities themselves, as well as between natural sciences and the social sciences, with regard to their definition.[27] Navigating the biological definition, or purporting to define the embryo in general, is not the aim of this book.

Second, this analysis is primarily concerned with embryos *in vitro*. It does not extend as far as to discuss the research upon and/or use of fetal or abortus tissue. Nonetheless, due to the nature of tracing the legal history of governing this early stage of human life, Chapter 2 does not exclusively focus on embryos (of which there was very little mention until the twentieth century) and thus uses embryo/fetus interchangeably until a concrete *legal* distinction emerges in the chronology.

[27] See M. Jacob and B. Prainsack, 'Embryonic Hopes: Controversy, Alliance, and Reproductive Entities in Law and the Social Sciences' (2010). *Social Legal Studies*, 19(4), 497–517.

Third, it is clear that 'the embryo', however defined in law, has no objective definition (like many things), nor shall one be provided here. Rather, law's navigation of actual/possible/multiple definitions are explored, as they have changed throughout history, and as they are used today. It is argued that this navigation is important for the future of human health, as it is greatly affected by the governance of the use of embryos for reproduction and research. As stated, this work will focus on the embryo *in vitro* as a cornerstone to the regulation of reproduction and research under the 1990 Act (as amended). Thus, for the purpose of references to the entity within this book, when referring to embryos *in vitro*, it is referring to entities created within the rubric of the 1990 Act (as amended), in line with the legal definition of embryo given in the legislation under s. 1.

This definition has been used because it is used in the primary legislation with which this research is concerned. By taking this definition, this work is not necessarily supporting its use within law. The above describes what the 1990 Act (as amended) calls 'permitted embryo' (i.e. a 'human' embryo) is human and anything else is not, but it is nonetheless unclear on what 'human' entails. How we should define embryos, or indeed 'human' embryos, is a matter beyond the ambit of this work, the reasoning for which is discussed briefly next, and further in Chapter 7. It was nonetheless important to clarify this here and in advance of the discussion which follows.

In sum, herein when 'the embryo' is referred to here, it is primarily referring to the embryo-in-law (as opposed to 'the embryo' in other contexts). Notably, at the end of Chapter 3, this analysis makes a marked shift from referring to 'the embryo' to 'embryos' in order to reflect the findings of Part I (the multiple 'embryos' governed under the 1990 Act's singular 'special status'). Exceptions are made to this when discussing the works of others.

The Embryo's 'Moral Status' and 'Legal Status'

'Moral status' and 'legal status' are referred to throughout this text in reference to embryos and occasionally fetuses. Here, 'moral status' is primarily taken to mean the moral standing of embryos within society.[28] While the 'moral status' of the embryo is mentioned throughout, it is not the focus of this work per se. Nonetheless, this analysis

[28] See A. Jaworska, and J. Tannenbaum, 'The Grounds of Moral Status' (*The Stanford Encyclopedia of Philosophy,* 10 January 2018),www.plato.stanford.edu/entries/grounds-moral-status/.