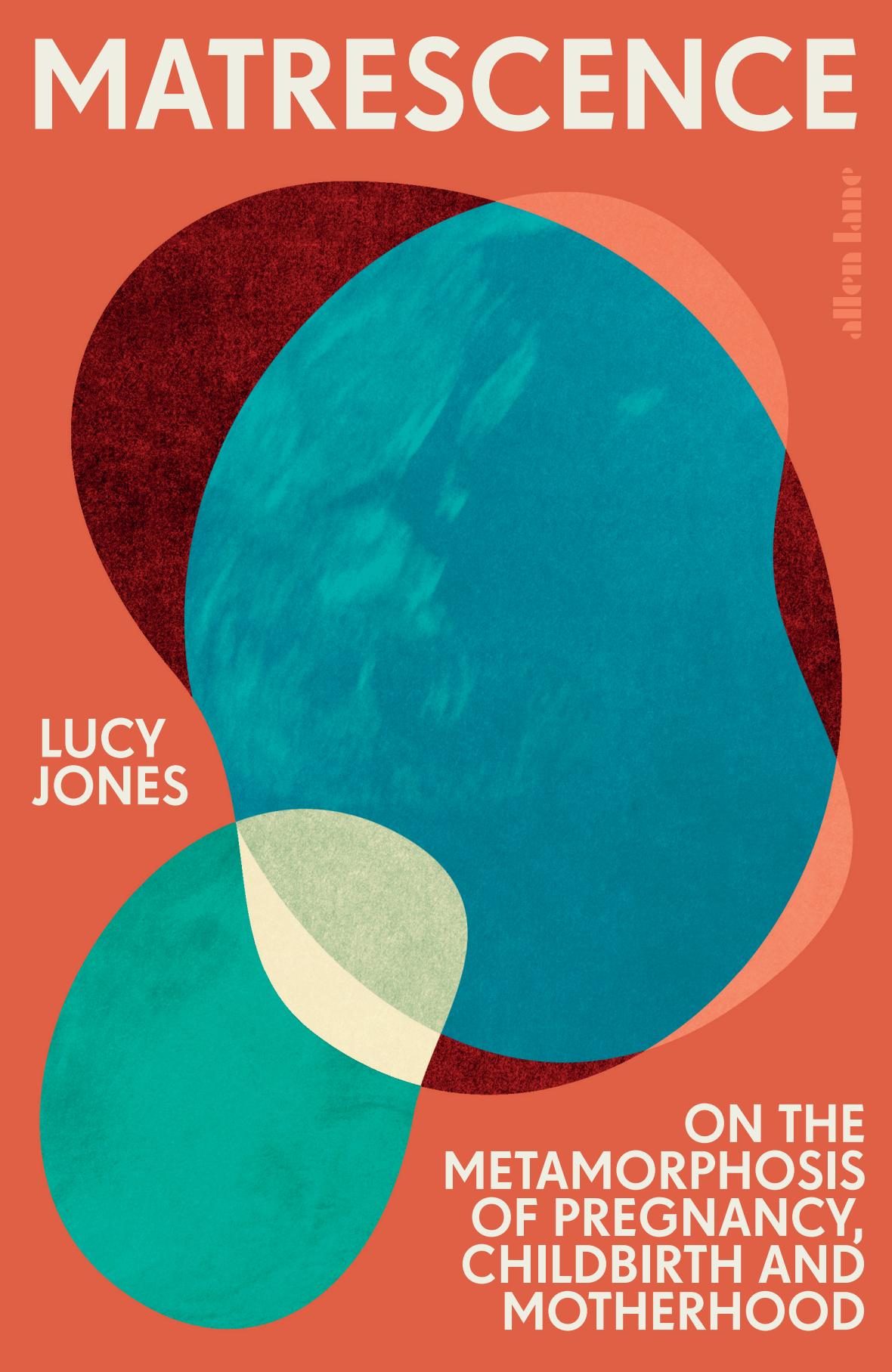


MATRESCENCE



LUCY
JONES

ON THE
METAMORPHOSIS
OF PREGNANCY,
CHILDBIRTH AND
MOTHERHOOD

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*On the Metamorphosis of Pregnancy,
Childbirth and Motherhood*

LUCY JONES



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For Naomi E
May C-B, Lottie A
Chloe S-M
With gratitude.

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*When a human egg melds with sperm enzyme, zinc fireworks spark.¹

Prologue

It's early autumn and the forest is a rainbow. The tops of the broad-leaved beech trees are copper, swelling to yellow. Green chlorophyll holds on underneath. Above, a great tit chitters. A dog barks nearby. Cars swoosh in the distance.

I'm here to find slime moulds.

I am looking for slime moulds for a few reasons. First, they are beautiful and peculiar. Second, though abundant, most of their forms require unearthing, and I am interested in hidden things. Third, I don't know very much about them – no one does – but I know that they undergo radical, irreversible metamorphosis, and I think that this is what has been happening to me.

Myxomycetes – the scientific name for slime moulds – are fungus-like organisms. For a long time, scientists thought they were fungi (hence *Myceto*) but now they are classified in the kingdom *Protista*, a rag-tag group of beings that aren't animals, plants or fungi. Part of their life cycle is spent as fruiting bodies that can look a little like minuscule mushrooms, and they live anywhere there is organic matter: decaying logs, sticks, leaf litter, dung. I search the bark and stumps around me for the tiny, bodacious flashes of colour I have seen online or in my field guide: iridescent ingots of petroleum, corndogs made of peach glass, balloons of lip gloss on black stilts, pink foam dissolving into sherbet, liquorice spogs with a hundred spider legs.¹ I know what shapes to look out for with my hand lens: eggs, cones, nets, plumes, goblets; in clutches, or alone; no more than a millimetre or so high.

Although I have read that they are everywhere, I have never seen a slime mould at this fleeting stage of its life.

Myxomycetes actually spend most of their existence in a state more characteristic of an animal. This is the slime mould as plasmodium: a

Prologue

thin, slick mass. It moves around, scoffing fungal hyphae, algae, spores and other organic matter, squeezing through tiny holes and crevices in wood, advancing and growing. Commonly, it is bright yellow. In this state, it can grow significantly, spreading over bark and mulch, in the shade where it is moist and dark. Occasionally there are sightings of plasmodium metres wide. Although they are single-celled, with no brain or nervous system, biologists have found they can solve problems, such as mazes, learn, anticipate and ‘teach’ younger slime moulds pieces of knowledge.^{2,3} Astronomers have relied on their networking behaviour to help map the dark matter holding the universe together.⁴

I think I have seen a plasmodium here before. It was about the size of a child’s hand and looked like an acid yellow gob vomited across a fallen log, dripping over the bark, but so vital it might have reared up, smeared its way towards us, and chased us through the forest.

Sometimes, a plasmodium will be enclosed by a slime sheath and leave behind a glossy trail as it wanders. Then, after a number of days or weeks, when it runs out of food – or for other reasons unknown – it moves into a drier, more exposed habitat and transforms into a colony of completely different beings, with a new existence and purpose: sessile and spore-releasing. It, you could say, becomes they. The woodlands of the world glisten and crawl with myxomycetes, invisible to the human eye unless you’re looking.

I get down on my knees, combing old logs and sticks, stroking and parting filigrees of lichen and moss.

Over the past couple of years I have found myself increasingly drawn to the fluidity of the woods, and the abstruse fluidity of slime moulds – an organism with 720 sexes.⁵ To the complex relationships between lichen and moss and bacteria and spores and fungi and mycelium and trees and decaying matter and dead wood and frass. The complex life-processes and ‘intelligence’ of these organisms expand my perception of life and help me see our wider ecologies more clearly.

Half an hour or so passes, and I don’t find what I’m looking for,

Matrescence

exactly. A harvestman walks past, ghostly gentleman sprite. Spindly mushrooms stand on stalks. Purple gills, white gills. The mossy knolls are filled with tardigrades and rotifers and springtails. Dead man's fingers leer erect. Epiphytes and moss nestle. Puffballs puff. Worms metabolize compounds. Underneath me, the mycorrhizal network resides: pulsing, combining, attending, underpinning the whole forest.

The forest will turn from autumn bright to brittle snooze, from germination to new growth, from life to death to life, and I will keep searching for rafts to climb on to, powered by the urge to comprehend what the world is like, and what my little ecosystem could be.

Introduction

Women and love are underpinnings.

Examine them and you threaten the very structure of culture.

Shulamith Firestone, *The Dialectic of Sex:
The Case for Feminist Revolution*

Sorry this Write up sucks I'm still mentally totally a wreck after baby for some reason. Like my iq is down about 50 points and words seem weirdly difficult lol.

Grimes, Instagram, 2020

When a human animal grew inside my body, I started to realize that some hoodwinking had been going on. When she left my body, I noticed more.

Pregnancy, then birth, and then – big time – early motherhood simply did not match up with the cultural, social and philosophical narratives I had grown up with. What I felt and saw did not accord with what I had been taught about women and men, fathers and mothers; I could not connect my present experience with what I had so far absorbed about the body, the mind, the individual and relational self, and our collective structures of living.

At first, I thought that I must be going mad. I searched desperately for ways of understanding what was happening to me. I started to realize that my mind had been colonized by inadequate ideas about womanhood, about motherhood, about value, even love: there was canker in the roots of my habitat.

A sense that I had been fundamentally misinformed about the

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female body and maternal experience set in fast. The first day that I felt nauseous, five weeks or so pregnant, I was excited. ‘Morning sickness’ was a sign of a healthy pregnancy, I had read, and it confirmed to me what had seemed so mysterious and diffuse: that inside me was the child I had always dreamed of, finally. When it came, the nausea was immediately severe, but I figured, Well, let’s see, the morning is around four hours of the day – not even a quarter of my waking hours – I can deal with that. I nibbled ginger biscuits and took sips of water.

Then noon came around. Severe nausea persisted.

3pm. Still there.

6pm. What?

8pm. How?

10pm. It remained.

Then, like this, the next day, and the next and the next and the next. All day, every day. For five months.

Meanwhile, a parallel, more disquieting change seemed to be happening in my mind. I was overjoyed to be pregnant, attached to the growing creature within, but I found myself becoming subdued, more introverted, increasingly disrupted as the weeks passed. I had no language with which to understand or describe this change, but my consciousness felt different: restructured or rewired. This freaked me out. It was as if someone else had moved in, making a home in both my uterus *and* my brain. I thought I must be imagining it; I had understood pregnancy to be a relatively straightforward physical process with a few ‘hormonal’ days here and there. I thought the baby would grow inside my body, as in a flowerpot, that I would still be the same person. But that didn’t seem to be the case.

As I came close to term I realized that something else had been accreting within me, too: a strange admixture of unexamined moral assumptions about motherhood.

At the time, I couldn’t fathom exactly where I’d picked up these ideas, but it became clear, once the baby was born, that I felt that self-sacrifice was an essential component of being a good mother.

Introduction

My past independence had to end, and I would now need to live to serve others in an intensive and ultimately self-sacrificing way.

Really, I knew next to nothing about the maternal experience or the work of raising and caring for other human beings. I had never seen a painting of a woman giving birth. I had never heard a song about pregnancy. I had never read a book about the loss of self in early motherhood. I had never watched a play about maternal mental illness. I had never changed a nappy or spent time with young children. And still, I had a curiously adamantine conception of what it required.

As the baby grew, I found that if I tried to do anything for myself, I would be agonized by guilt and a diffuse sense of discomfort. I became increasingly driven to try and untangle these punishing feelings – to separate them from my desire to protect, love and care for my baby. I needed to locate the origins of this dissonance, so as to work out how to nurture her, while living some kind of life of my own. I began to look everywhere for clues.

O

Eventually, I encountered the concept of the ‘institution of motherhood’, developed by the feminist poet and essayist Adrienne Rich in her book *Of Woman Born*.¹ Writing in 1976, she showed how wider societal conditions – in a word, patriarchy – had turned motherhood into a ‘modern institution’, with its own rules, strictures and social expectations, all of which were designed to control women’s behaviour and thought. Rich made clear that it was the socio-cultural *institution* of motherhood, not the children themselves, that oppressed women and could even mutilate the relationship between mother and child. The institution fostered the idea that women are born with a ‘natural’ maternal ‘instinct’ rather than needing to develop knowledge and skills as caregivers. The uneven power relations between mother and child were, she argued, a reflection of power dynamics in society. It was a set-up, in which mothers were destined to fail. The institution found ‘all mothers

more or less guilty for having failed their children'.² Perhaps I wasn't going mad.

I was amazed by how relevant *Of Woman Born* was, forty-something years after it was first published. Rich's was the first voice that described the dilemma that had engulfed me. She had her children in the 1950s. Almost seventy years later, the taboos she described were still strong. It shocked me to realize that the leading assumption I held about motherhood was identical to Rich's:

That a 'natural' mother is a person without further identity, one who can find her chief gratification in being all day with small children, living at a pace tuned to theirs; that the isolation of mothers and children together in the home must be taken for granted; that maternal love is, and should be, quite literally selfless.³

How could this be? I had grown up reading Greer, Beauvoir, Firestone. How could I have reached my thirties with this archetype still deeply sewn into me?

While I had always wanted children, I realized, with a jolt, that I didn't hold mothers or the work that mothers do in high esteem. I had felt the need to hide certain aspects of my pregnancy and early motherhood from colleagues and employers. I had internalized the message that I had to keep motherhood separate, cloistered; I expected to be judged and found wanting by the working world for having children. I saw how the work of motherhood was valued neither economically nor socially: it was not regarded as a site of power or esteem. In fact, it was the opposite. While society still judges women without children, to be associated with 'the maternal' was to be silenced, limited and diminished. I was frightened of being defined by my reproductive labour – and being written off for it.

As I began to interrogate my attitude towards motherhood, I was shocked. I saw that I had perceived it as mindless and unintellectual, of low worth and of low value, dull, nothing to write home about. It wasn't *productive* in the real sense. Looking 'mumsy' was not something I aspired to. I didn't want to carry the 'stank of uncool

Introduction

motherhood', as the writer Rufi Thorpe puts it.⁴ Being a caregiver wasn't challenging, wasn't high status. I thought it was *easy* work. Ha!

I would soon learn that caregiving was much, much harder, more confronting, exciting, creative, beautiful, stressful, alarming, rewarding, tedious, transformative, enlivening and (occasionally) deadening than I imagined, and much more essential to a working society than we give it credit for. I felt increasingly compelled to figure out the reasons for the continuing lack of authentic respect and support for the invisible work of pregnancy, birthing children and caregiving. Not least because I was finding out first-hand how harmful it could be.

O

The experience of giving birth had been bamboozling. I was attracted by the idea of a 'natural' birth, and I believed what I'd heard and read: that, if I was relaxed and used my mantras and positive affirmations, I wouldn't feel too much pain, and everything would be fine. This was not the case.

In the hours, weeks and months that followed, I grew more and more alienated, frustrated by the lack of language to articulate the reality of childbirth. I had always believed in the power of words but, here, they failed me. No one was talking about pain; about birth as an emotional process; about how it felt to have grown another human, to be two people at the same time, and then to be vacated, to push a person into being.

I knew nothing about the emotional and psychological transition that follows birth. I had no idea that something was happening to my brain – that it was literally changing shape. I had no idea what was coming: the anxiety, the life-exploding romance, the guilt, the transcendence, the terror, the psychedelia, the loss of control, the rupture of self.

So instead, for a while, I acquiesced. I used the language I had been given: the official lexicon for talking about motherhood. I fell in line, finding that you could sometimes admit it was a bit tiring as

long as you mostly assured the person you were talking to that you loved the child and oh, yes, it was definitely the best thing that had ever happened to you.

Blindsided and increasingly isolated, I fell down a rabbit hole. I had gone, but I didn't know where, or if I would return. I found I was confronted with my selves anew: my childhood self, the bare, naked roots of early psychic disturbances. This, I did not expect. I thought early motherhood would be gentle, beatific, pacific, tranquil: bathed in a soft light. But actually it was hardcore, edgy, gnarly. It wasn't pale pink; it was brown of shit and red of blood. And it was the most political experience of my life, rife with conflict, domination, drama, struggle and power.

O

Questions swirled around me. What was happening to my brain, my mind and my body? Why did it feel so wrong to be alone at home, mothering my young child? Why did it also feel so wrong to be away from her? Why did it seem as if my nervous system hadn't evolved for this?

I set about trying to solve the puzzle. Since I had a background in science, health and ecology journalism, I turned first to research papers and journals, and read about neurobiology, endocrinology, the study of maternal mental illness. I soon realized that cultural apathy towards this most dramatic of transitions in a person's life went hand in hand with the failure of science – biological and social – to address it. In 2011, researchers from Scotland wrote in the *Journal of Psychiatric and Mental Health Nursing* that there was a 'vacuum in the evidence base' in research on post-natal depression, the primary mental illness associated with motherhood.⁵ But a growing field of research had begun to focus on the maternal experience. Through the second half of the 2010s, the first landmark neuroscience studies had been published, showing just how drastically pregnancy and early motherhood alters the brain, as well as how looking after infants can change the brains of non-pregnant caregivers.

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As I read, I realized that there was a lot more ‘nature’ happening to me than I had been led to believe, but also a lot more ‘nurture’. I studied the history of ‘the modern institution of motherhood’, learning how and why expectations of maternal servitude and self-sacrifice were first constructed, and how capitalism and patriarchal systems had combined to create our current ideas about womanhood and motherhood – producing what I will call the modern institution of *intensive* motherhood. I interviewed experts in the fields of evolutionary biology, social science, psychoanalysis, philosophy, neuroscience, healthcare and psychiatry, and saw how new parents were being failed by inaccurate assumptions about the benefits of the ‘traditional’ nuclear family structure – assumptions which routinely forgot or ignored how babies are raised by networks of people in the majority of the world.

When our baby was about nine months old, I had had a breakthrough. I happened upon a word I’d never read before, in an article in *The New York Times* written by a reproductive psychiatrist called Alexandra Sacks.⁶ It was a word which brought together everything I was feeling, seeing and reading about.

Matrescence.

‘The process of becoming a mother, which anthropologists call “matrescence,” has been largely unexplored in the medical community,’ Sacks writes. ‘Instead of focusing on the woman’s identity transition, more research is focused on how the baby turns out. But a woman’s story, in addition to how her psychology impacts her parenting, is important to examine, too.’

I breathed.

The article mentions the mixture of emotions that mothers experience. Joy, yes, ‘at least some of the time’. ‘But most mothers also experience worry, disappointment, guilt, competition, frustration, and even anger and fear.’

The idea that this was normal made my shoulders drop in relief for the first time in months. I kept reading.

‘Too many women are ashamed to speak openly about their

complicated experiences for fear of being judged. This type of social isolation may even trigger postpartum depression.'

I looked for 'matrescence' in my dictionary. Matins. Matisse. Matricide. No matrescence.

I checked my Dictionary of English Etymology. Matriarch. Matriculate. Matrimony. No matrescence.

I wondered if I could at least find any words that associated motherhood with an emotional journey.

I turned to the word *mother*.

A. female parent.

B. womb, from the fourteenth century, preceded by a cross, meaning obsolete. And ah, here was something. *Hysteria* (also with a cross). I looked up hysteria. 'Functional disturbance of the nervous system, which was thought to be due to disturbing of the uterine functions.'

I looked to the next entry for mother. 'Dregs, scum', from the sixteenth century. A 'mucilaginous substance produced in vinegar by fermentation', from the seventeenth century. And, 'original crude substance'. I wondered if these uses had been influenced by the Biblical story of Eve – eating the apple, disobeying God, the original sinner.

I checked other dictionaries. No entries for 'matrescence'. As I typed it on my computer the word processor insisted on underlining it with a dotted red line. It's still there now, years later, blotting the page with red. This isn't a word, it says. This isn't a thing.

Only, it is. After childhood and adolescence, there is no other time in an adult human's life course which entails such dramatic psychological, social and physical change.

I ordered a book published in 1973 called *Being Female: Reproduction, Power and Change*. It was edited by Dana Raphael, the late American medical anthropologist. Her essay 'Matrescence, Becoming a Mother, A "New / Old Rite de Passage"' is cited as the first mention of the word. The book cover is typically 1970s: brown, orange and cream. Under the title, there is an artist's rendering of a woman sitting on the floor, her naked body partly concealed by her limbs.

Introduction

In the essay Raphael compares Western cultures with that of the Tikopia, who live on a remote, volcanic island in the south-west of the Solomon Islands. In the West, when a child is born, the announcement would be ‘a child is born’. The Tikopia would say, instead, ‘a woman has given birth’. The Tikopia have a sense of the *newborn mother*.⁷

Raphael laments the historical lack of interest ethnographers have had in motherhood rites because, in the West, she explains, motherhood is considered ‘dull and unchanging’.

I looked up rites of passage – celebrations or rituals that mark important transitions in a person’s life. I couldn’t think of any for matrescence. The list on Wikipedia for ‘Coming of Age’ includes Bar and Bat Mitzvah, Sweet Sixteen, Debutante Ball, Scarification, First Menstruation, Walkabout. Then, there is a section on religious rituals. I have had the Christian ones. Baptism. Confirmation. I wondered if ‘Baby Shower’ might be included, the closest to a matrescence ritual I could think of. It wasn’t. There was nothing about becoming a parent.

‘The critical transition period which has been missed is MATRES-CENCE, the time of mother-becoming,’ writes Raphael. ‘During this process, this rite of passage, changes occur in a woman’s physical state, in her status within the group, in her emotional life, in her focus of daily activity, in her own identity, and in her relationships with all those around her.’⁸

The book was published ten years or so before I was born. Almost half a century later, we still barely acknowledge the psychological and physiological significance of becoming a mother: how it affects the brain, the endocrine system, cognition, immunity, the psyche, the microbiome, the sense of self. This is a problem. Everyone knows adolescents are uncomfortable and awkward because they are going through extreme mental and bodily changes, but, when they have a baby, women are expected to transition with ease – to breeze into a completely new self, a new role, at one of the most perilous and sensitive times in the life course.

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Learning about matrescence eventually gave me the confidence to talk openly to other new mothers and I soon realized that many were similarly startled by what they were experiencing. Many were feeling that they were to blame for the extent of their struggles. We joked obliquely about the stress we were under, about the ‘maternal hospital fantasy’ – the idea that breaking a minor limb would be a good way to get a rest and be looked after for a night. Here, I realized, were the results of twenty-first century parenting norms, which had become much more intensive, child-centred and demanding than they ever had been before. These norms, combined with neoliberal economic policy, the erosion of community and the requirement for most families to have two incomes to live because of the ever-higher cost of living, were leading to staggering levels of tension, guilt and ill health among mothers.

Pregnancy and early motherhood is a vulnerable time for a woman’s health and wellbeing. Across the globe, a woman dies every two minutes due to pregnancy and childbirth, with the majority of deaths happening in low-income countries.⁹

Even with advances in modern medicine, and in high-income countries with skilled medical care, new mothers are highly susceptible to illness and disease. It is difficult to know exactly how many women become unwell in the period before and after becoming a mother. In the UK, where I live, it was previously thought that 10–15 per cent of women develop a mental health problem in pregnancy or the first year of new motherhood – including mild and moderate to severe depression, anxiety, PTSD, psychosis – but more recent figures suggest it could be as many as 20 per cent of women.¹⁰ This means over 100,000 women a year in the UK become mentally unwell in matrescence. Globally, the prevalence of postnatal depression is 17 per cent. With two billion mothers in the world, this means over 350 million women experience perinatal mental health problems. The likelihood of depressive episodes doubles during this period, compared with other times in a woman’s life.¹¹ This figure rises for women of colour, those in disadvantaged socioeconomic groups who face systemic health inequalities, and women who have

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experienced loss (miscarriage, stillbirth, neonatal death or a child taken into care).^{12,13,14} Suicide is the leading cause of death in women in the perinatal period between six weeks and one year after giving birth in the UK.¹⁵ Clearly, this is a grave situation.

But these figures are likely too low: the National Childbirth Trust (NCT), the most influential parenting institution in the UK, estimates that in fact half of new mothers experience mental health problems but only half of those will seek help.¹⁶ Many women, for various intersecting reasons – many of which are to do with the threat of stigma and discrimination and, ultimately, the fear of their babies being taken away from them – are reluctant to seek treatment. As the writer and activist Sandra Igwe has written, this is a serious problem facing Black women in England, for whom a lack of trust in services, fear and shame represent major obstacles to seeking the medical care they need.¹⁷

‘Generally in society we don’t pay the attention we should to mental wellbeing,’ Dr Alain Gregoire, a consultant perinatal psychiatrist, told me.¹⁸ ‘Or value mothers or take an interest in parents and young children.’ The lack of adequate investment in maternity services and poor postnatal care attests to this. In 2014, a report from the Chief Medical Officer for England concluded that postnatal care was ‘not fit for purpose’.¹⁹

A 2019 survey commissioned by *Motherdom* magazine showed just how many women were feeling low (45 per cent), anxious (54 per cent) and depressed (35 per cent) since having a child.²⁰ One in five hadn’t told anyone about their feelings and over half (59 per cent) said they did not feel supported by their family. Almost half the new mothers surveyed (45 per cent) said they had to deal with everything alone. Why would this be? Perhaps the fact that just over one in five (22 per cent) thought they would appear ‘weak’ has something to do with it. Earlier research suggests half of mothers with children under five experience ‘intense emotional distress’ on a regular or continual basis.²¹

Fathers, too, are suffering. In 2022, a study by researchers at Ohio State University found that 66 per cent of parents met the criteria

for burnout, where stress and exhaustion overwhelm the ability to cope and function.²²

As my matrescence continued, with the births of my sons in 2019 and 2021, I found that the overwhelming majority of the mothers I met and listened to over the course of those years were bewildered and disoriented. I felt compelled to continue my investigation into what the transition to motherhood entailed, and why. I wanted to find out how much maternal mental illness was inevitable and how much might be avoided through improved treatment and care – through a fairer society. To what extent was postnatal mental illness intrinsic and biological, and how much of it was an understandable response to the design of modern parenthood? Why was motherhood in my society so dangerous for women’s mental health and wellbeing? I suspected that the rise in perinatal mood ‘disorders’ must be telling us something important about the way we live. Unlike other cultures, which treat becoming a mother as a major, traumatic life crisis, with special social rites and rituals, Western societies had been failing to recognize matrescence as a major transition: a transition that involves a whole spectrum of emotional and existential ruptures, a transition that can make women ill, a transition in which the mother, as well as the baby, could be celebrated. We had been failing to care for mothers, or for one another, very well at all.

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Soon after reading about matrescence for the first time, I interviewed Alexandra Sacks. She told me that we should start by simply talking about matrescence: in some cases, this would be enough to prevent women from getting ill. ‘Women would know that this ambivalence is normal and nothing to be ashamed of; they would feel less stigmatized and more normal and it would reduce rates of PND [postnatal depression],’ she said.²³

I have written this book in the spirit of Sacks’s instruction: as an invitation to start talking about matrescence. It is a personal story – a record of what happened to me mostly during my first

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experience of pregnancy, childbirth and new motherhood – and I offer it here as a case study. I have shared the most compelling and rigorous scientific research that I encountered as I tried to make sense of what was happening to me at each stage.

This is a story of my matrescence as a woman who has carried biological children within a heterosexual relationship. But, of course, not all mothers are pregnant, or give birth, or are biologically related to their children. Nor is the work of mothering an exclusively female activity. Men mother. Grandparents mother. People without their own children mother. However, women still do most of the caregiving in the society I live in, especially in the early years, and I am interested in the particular cultural and social gendered expectations and pressures on female parents, and women socialized as female, so I use the word ‘mother’ more frequently than ‘parent’.

The new research into the maternal brain and maternal mental health – much of which has only been published in the last few years – ought to change the way we think about new families and the support they need, the structure of the working world, the sorry state of investment in perinatal care. Recent evolutionary and anthropological research underlines how extraordinary and oppressive our modern-day maternal ideals are. Science tells us that the neurobiological process of parent–infant bonding and the shift into new motherhood is more diverse and interesting and wild than the bland fantasies on Mother’s Day cards. Matrescence troubles the idea that we are self-contained individuals, separated from the rest of the living world.

With this book I hope to begin new conversations about how becoming a mother changes a person, about what it means to metamorphose, about what we can do to recognize new mothers in their matrescence and how we can reimagine the institution of motherhood. My hope is that this book might be a thread of mycelium that leads to other ways of thinking. Alongside my own story, I have drawn in ecological case studies: stories of change, process and metamorphosis in the rest of the living world that helped me place my experience into our wider ecological context. I have done so

Matrescence

partly to show that natural change is not always beautiful, and that our ideas of the ‘natural’ are largely invented. Matrescence has been the most ecological, biological experience of my life, and these stories were my wayfinders. Engaging with the earth – thinking with the earth – enabled me to see and think more clearly.

My children have brought me joy, contentment, fulfilment, wonder and delight in staggering abundance. But that’s just part of the story. This is the rest.

PART ONE

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Tadpoles

Frogspawn mass together in a jellied gloop, each globe squidgy and hard like an eyeball. The black round dot in the middle is the size of a peppercorn. It doesn't seem possible that it will change but one morning, well, there it is and the peppercorn is no longer a peppercorn but an elongated comma. The next day a few start to wriggle – hectic – like small charcoal ribbons. Feathery gills emerge overnight from their necks, like ruffs. They wiggle out of their jellied beds, free. Now, they alternately pause and float at the top of the water, or silk-twitch around, looking for food. A few days later, their tails suddenly thicken and lengthen, becoming one long black arrow encased in 30-denier tights. For much of this time, they fall throuuuugh the water, and let their bodies carry them down,

down,

down.

Some are bigger than others. Some are quicker than others. Some move less. Over the next few days, their heads grow until they look like cartoon sperm, propelled through the water. Small nubs appear, the beginnings of legs. Their bodies turn from opaque to translucent, speckled with gold. Next, feet appear on each side, webbed and splayed. At the end are threadlike tree-branch toes. They suck the sides of the tank where we are raising them with their black ring mouth. Their hearts? Red. A waste tube trails beneath. *Flick!* Their tails can ripple the surface of the water. They dive up and down, then become still and rest. Now, the bodies are dark green-black with bronze lacquer spots. Beady, crocodilian eyes emerge on top of their heads. Then, their arms emerge, with four-fingered hands.

Matrescence

The head becomes more pointed and the skin becomes less translucent. Then, it is a froglet with a tadpole tail! It is! Then – and you can barely believe it – it is a frog. It is!

A week later, one is lying at the bottom of the pond, pale and lifeless. Ten or so tiny, bright-pink bloodworms are going at it furiously, taking its body into their bodies, bit by bit.

I.

All-day sickness

The ego is first and foremost a bodily ego.

Sigmund Freud, *The Ego and the Id*

What I expected in pregnancy

Sickness in the morning
Glowing skin
Shiny hair
Bigger boobs
Weird cravings

What I did not expect in pregnancy

Restless leg syndrome
Acne
Hair loss
Kiss curls
Eczema
Sciatica
Constant and severe nausea
To feel stoned
Mysteriously high white blood cell count
Mysterious infections
Numb hands
Pins and needles
Hotter (in body temperature)

Matrescence

Incredible sense of smell
Colour changes (darkened nipples; vulva; hair colour)
Linea nigra
A digestive rollercoaster
Heightened sense of threat
Shame
Flatter nose
Increased vascularity leading to increased intensity of orgasm
Dry eyes
Pinguecula
Wider jaw
Needing to wee six times a night
A mouth full of blood after teeth-brushing
Ecstasy
Insomnia
A preoccupying obsessive urge for the baby to live
Brain fog
Di
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And then

To become

Something

Else

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It happened around the time I grew a heart.

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All-day sickness

I could smell everything. The armpits and groins of those who passed by on a wide road. Specks of food on a train seat. A cigarette around the corner. The town – population: thousands – and what kind of soap people used that morning. Coconut or tea tree oil or Pears or if they missed a shower, all chundering around in a horrible soup. At night I could smell leftover cooking fumes as if they were particulate matter in a pillow spray. Rotting seaweed from the other end of the beach. The breakfast breath of a shop assistant. Chip fat across an A-road. Postmix syrup and pub carpet seeping into the street.

Pregnancy gave me the one superpower no one has ever wanted: an extremely good sense of smell.

I was a dog now. Sniffing for danger.

Cars on the road sounded louder and appeared more aggressive; I lay awake at 4 o'clock in the morning worrying about the state of the world. My hair came loose. My forehead speckled with zits: bulbous, greasy.

I had an urge to eat most of the time. I wanted salty, fatty or sweet food on my tongue. It gave the slightest relief from the nausea.

Soft boiled potatoes. Fizzy cola. Heavy croissants. Crispy bacon and cream cheese. Melted cheese. Salt and vinegar-drenched chips. Salt and vinegar crisps. Salty tuna covered in mayonnaise. Fizzy orange. Rice and soy sauce and grated mature cheddar. Extra-mature cheddar. Pickled-onion flavour crisps.

On the bus to the British Library in London where I was working on the final edits of my first book, I would nibble oatcakes to suppress the bile climbing up my throat. Visitors are not allowed to bring food into the Reading Rooms so I'd sneak them in under my sleeves and bite secretly as I checked my sources on vulpine biology.

As soon as it turned 11 o'clock, I would make my way over the road to the greasiest spoon I could find. Order a jacket potato with tuna, sweetcorn, extra cheese – melted on top, please. Yes, and butter. Yes, mayonnaise on the side. Scatter salt on top. Ring pull click.

Fizz. Cold brown cola. I would sit and gorge, ignoring my humiliation at being an early morning gobbler in public. In return I'd receive twenty minutes of milder nausea.

The first trimester wasn't the healthy time I had aimed for. Fresh salad and vegetables turned my stomach most of all, and I couldn't swim more than a few lengths in the pool without tiring. One day, I watched a video on the NHS website.¹ 'The exercise and the healthy eating will push you in the right direction for a nice, quick labour and a lovely healthy baby at the end of it.' A nice, quick labour? That sounded ideal. I'll get back to healthy eating and exercise soon, I thought.

But as I looked on forums and read other women's accounts, it started to become clear that many were feeling sick round the clock, some throughout pregnancy, and no one knew what caused it, how to treat it properly, or why on earth it was called morning sickness.

O

In the late 1980s Margie Profet, a biologist from the United States, developed the hypothesis that pregnancy sickness is an adaptation to protect the growing embryo, particularly at the time of organogenesis. This stage in the development of the foetus is the most vulnerable and susceptible to disruption. Profet's research suggested that nausea protected the embryo from toxins because it arrests the appetite.²

A small but interesting study found that women carrying male foetuses have higher levels of disgust and food aversions, because male foetuses are more vulnerable than females.

Samuel Flaxman, an evolutionary biologist at the University of Colorado, built on Profet's work with a review published in 2000 that supported her hypothesis.³ Flaxman found that the most common aversions were towards alcohol, meat, eggs, fish and strong-tasting vegetables: foods which would've been habitats for micro-organisms and toxins in our fridge-less evolutionary history.

Strangely, despite the fact that almost 70 per cent of women experience pregnancy nausea and vomiting, and severe pregnancy sickness can be fatal for both baby and mother, we still don't know much more than this.⁴

At least the medical establishment no longer believes that pregnancy sickness is the manifestation of immorality. In the surprisingly recent past, it was blamed on 'neurosis, an unconscious desire for abortion, a rejection of motherhood, a scheme to avoid housework, and sexual dysfunction', explains the ecologist Sandra Steingraber in her 2001 book *Having Faith: An Ecologist's Journey to Motherhood*.⁵ A Scottish physician writing in the 1940s believed that morning sickness could be caused by 'excessive mother attachment'.⁶ Even Simone de Beauvoir wrote in *The Second Sex* that vomiting in pregnancy was a manifestation of fright at the alienating experience of growing a child within, of being the 'prey of the species, which imposes its mysterious laws upon her' and the 'conflict between species and individual in the human female'.⁷

These bizarre ideas were the legacy of the theory of 'maternal imagination', which was prevalent between the sixteenth and eighteenth centuries.⁸ Physicians believed that pregnant women could change the growing foetus with their minds and thus congenital disorders were the fault of the mother. If she was startled by a frog, for example, the child might end up with webbed feet. Or if she spent too long gazing at a picture of Jesus, the baby might come out with a beard.

Perhaps there is a residue of the 'it's all in her head' school of thought today. The long-held idea that women's bodies and minds are in some way untrustworthy, threatening and subject to whims of irrationality – such as the Ancient Greek belief of the pesky 'wandering womb' roving the body causing problems – might explain in part why pregnancy sickness is still not accurately described.⁹

But almost every story we've been told about the reproductive process is entangled with ideology, with prevailing ideas about gender. I was taught in science lessons at school that sperm are released

and race each other until the fittest and fastest sperm wins and penetrates the egg; a re-telling of the hero myth, essentially, with the egg as the passive vessel. In fact, we know now that this isn't what happens at all. Sperm cells are immature when they arrive in the vagina. Then women's oviduct cells secrete chemicals which mature the sperm and allow it to swim. Instead of the sperm poking the egg like a needle, the egg actually enfolds the sperm and the two cells melt into one.

In 2020, a paper was published in the *British Journal of General Practice* by a group of clinicians who recognized that the condition of nausea and sickness in pregnancy hadn't been clearly described by medicine or statistically modelled in any way that would enable the term 'morning sickness' to be accurately analysed.¹⁰ The women they studied experienced it, yes, all day, with a peak in the morning.

The study concluded that, 'referring to nausea and vomiting in pregnancy as simply "morning sickness" is inaccurate, simplistic, and therefore unhelpful.'

In 2023, the NHS still refers to pregnancy sickness as 'morning sickness'.¹¹

This terminology serves to minimize the problem. It helps explain why medical care, treatment, research and wider social support is still inadequate, especially for women who suffer most severely.

Hyperemesis gravidarum, the most extreme form of pregnancy sickness, suffered by one to three women in a hundred, can lead to hospitalization, dehydration, starvation, brain atrophy, blood-clotting and death if untreated. In the largest survey to date of women suffering from the condition, 67.8 per cent were bedridden throughout pregnancy and 25.5 per cent thought about suicide.¹² Younger age, social deprivation and an ethnic minority background are associated with more severe illness. Women report not feeling taken seriously, having their symptoms brushed off and being told they are exaggerating.

O

All-day sickness

The list of foodstuffs I needed to avoid was long and peculiar: liver, Gorgonzola, Roquefort, shark, too much coffee, liquorice root, more than four cups of herbal tea a day, more than two portions of oily fish per week (although I must have two).¹³ I kept hearing how important my diet was for the development of my future child and so I tried to eat healthily, but I couldn't help but be struck by how the conversation around prenatal health was focussed solely on the individual woman's lifestyle choices (her alcohol intake, her weight, her physical activity, as well as her diet), without any meaningful consideration of the wider environment she inhabits.

One of the foods I was instructed to avoid was fish with too much mercury, such as tuna, as it can harm the unborn baby. The NHS also advises limiting the intake of oily fish because of the pollutants – dioxins and polychlorinated biphenyls – within.

Although some mercury occurs naturally, the reason fish – one of the foods that contains the fatty acids needed to promote healthy development of the foetal brain – is now considered harmful is down to human industrial activity, particularly the operation of coal-fired power plants which emit mercury.¹⁴ Since 1882, when the world's first coal-fired power station, the Edison Electric Light Station, was built in London, industrial nations have been poisoning sea creatures and those that eat them, including pregnant women.

It's easy to avoid eating fish if you live, as I do, in a place where other foods are plentiful, but harder in countries where it is a major food group. Pregnant Inuit women from Nunavik, for example, are exposed to high levels of contaminants.¹⁵ In 2017, 22 per cent of women in that group exceeded guidance levels for mercury and polychlorinated biphenyls. Exposure to mercury has been associated with ADHD symptoms in Inuit children.¹⁶

'When it comes to environmental hazards, not only do we dispense with the principle of "In ignorance, abstain," we fail to inform pregnant women that the hazards even exist,' writes Steingraber.¹⁷ She studied how various industry groups downplayed the dangers of mercury, lead and other toxins. And, over two decades later, Steingraber's questions remain relevant: 'Why does abstinence in the

face of uncertainty apply only to individual behaviour? Why doesn't it apply equally to industry or agriculture?¹⁸

What does it mean to be pregnant at the most ecologically destructive time in human history?

In 2020, a study found that microplastics cross over to the placenta, joining such dubious record locations as the top of Mount Everest and the deepest ocean.¹⁹ 'It is like having a cyborg baby: no longer composed only of human cells, but a mixture of biological and inorganic entities,' said Antonio Ragusa, director of obstetrics and gynaecology at the San Giovanni Calibita Fatebenefratelli hospital in Rome, who led the study. 'The mothers were shocked.' The health impacts are still being studied, but scientists say microplastics could cause long-term damage and affect the developing immune system.

How on earth does a pregnant woman protect her baby from microplastics? Or from the black carbon emitted by vehicles, which, we now know, can penetrate the placenta?

How does she protect herself from the nitrogen dioxide emitted by diesel vehicles, which increases the risk of mental illness?²⁰

How does she avoid high levels of air pollution, which seem to be linked to miscarriages?

'Pregnant women, or those who want to become pregnant, must protect themselves from air pollution exposure not only for their own health but also for the health of their foetuses,' says Liqiang Zhang at Beijing Normal University, who found a link between exposure to air pollution and miscarriage.²¹ But how? By not going outside?

I avoided heavily trafficked roads when I could but there was nothing, really, I could do to stop the baby being born pre-polluted. My carbon monoxide levels were read by a midwife via a pump – in case I was lying about not being a smoker, I presume – and were slightly higher than normal because I lived near a railway station. I walked to places through the local park, avoiding the locus of trains.

But it stuck in the craw. I saw no sign of genuine urgency or action from governments to reduce air pollution and protect future

All-day sickness

generations at the most vulnerable period of their lives. I, though, had to avoid soft cheese and too much tea.

The Canadian philosopher Quill Kukla (writing as Rebecca Kukla) looked at the results when searching for ‘pregnancy’ in an academic library, and found that 80 per cent of the material related to toxins (such as alcohol and caffeine) that women had to avoid in pregnancy.²² This skew has wider consequences. It leaves ‘corporations, fathers, insurers, legislators and others’ off the hook, they write.

The impact of environmental destruction is minimized or ignored, and so are the social ills that affect our health: structural racism, economic inequality, sexism, classism.

A study of a million births in England between 2015 and 2017 published in the *Lancet* found that racial and social inequalities account for adverse pregnancy outcomes including preterm births, stillbirths and reduced foetal growth.²³ The largest inequalities were seen in South Asian and Black women living in deprived areas. The outcomes were preventable.

The research group estimate that 24 per cent of stillbirths, 19 per cent of live, preterm births and 31 per cent of live births with foetal growth reduction would not have occurred if all women had the same risk of adverse pregnancy outcomes as those in the least deprived group. Fewer babies and mothers would die and suffer, in other words, if our society wasn’t structured unequally along racial and social lines.

Yet, the focus remains on individual responsibility, maintaining the illusion that we are impermeable, impenetrable machines, disconnected from the world around us.

Imaginal discs

When a caterpillar is ready for the next stage of its life, it finds a quiet and safe place and spins itself into a cocoon or chrysalis. Then, the caterpillar releases digestive enzymes and dissolves itself. It disintegrates into a goo. If you were to pierce its protective case, a liquid would pour out. Its metamorphosis relies on this period of being broken down and melted.

Almost. The caterpillar holds onto groups of cells called ‘imaginal discs’. These disc-shaped structures grew when the caterpillar was still inside its egg, and there is one for each adult body part. One disc for the legs, another for the wings, one for the thorax, antennae, and so on. The caterpillar sheds all that it doesn’t need, leaving only these discs, which grow, powered by an amino acid-rich protein broth. It also carries previous memories into butterfly-hood or moth-hood. A research team of biologists from Georgetown University explored the retention of memory through metamorphosis. To do this, they tested whether moths (*Manduca sexta*, the tobacco hornworm) could remember what they had learned when they were a caterpillar. The scientists trained a group of caterpillars to avoid the odour of ethyl acetate – a sweet and fruity smell – by using electric shocks. The caterpillars learned. After the caterpillars transformed into moths, the scientists tested the moths to see whether they would still have an aversion to the smell of ethyl acetate. They did, leading the team to conclude that memory, via intact synaptic connections, survived metamorphosis.¹

For a while, the essential parts of the caterpillar are hidden within the goo – its neurons, its sensory experiences – but they do remain, and are remodelled to form the next stage of life.

2.

The emotional placenta

Hang the clothes you wore before you were pregnant in a place
where they are easy to see as that will motivate you
to keep your weight under control and go back to the same
weight you were before you gave birth. And buy a hairband
so that you don't look dishevelled after having the baby.

Seoul city government's advice to pregnant women, 2021

Just like the desire to write: a desire to live self from within, a desire for
the swollen belly, for language, for blood. We are not going to refuse, if
it should happen to strike our fancy, the unsurpassed pleasures of
pregnancy which have actually been always exaggerated or conjured
away – or cursed – in the classic texts. For if there's one thing that's
been repressed, here's just the place to find it: in the taboo
of the pregnant woman.

Hélène Cixous, *The Laugh of the Medusa*

INGREDIENTS FOR FIRST TRIMESTER HORMONAL SOUP

Oestradiol

Oestrone

Progesterone

Testosterone

Prolactin

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Osteoprotegerin

Allopregnanolone

Human chorionic gonadotropin

Thyroid-stimulating hormone

Relaxin

Cortisol

Oxytocin

FSH (follicle stimulating hormone)

LH (luteinizing hormone)

Probably others that we don't even know about yet¹

At eight weeks, we went for a scan in a private clinic in London. I was anxious and tense. We hoped we were paying £80 for reassurance. I lay on tissue paper on a cold, plastic bed and the sonographer swept her wand over my stomach. We saw what looked like iron filings, or flakes of ice, clumped into a reptile shape.

A heartbeat flickered.

The sonographer scanned a part of my body I'd never heard of, the adnexa – an appendage to the uterus – to check for fibroids. Everything was normal. Seeing the living foetus on the screen, I could start to process this new plurality. It was 1.5 cm long, making itself at home in my womb, which was now the size of a tennis ball – it had doubled over the last few weeks.

During this period, when the baby was constructing herself, stretching my womb to make space for her growing body, severe nausea continued through each waking moment. My squished bladder woke me often in the night interrupting my dreaming psyche. I would fret for hours in the dark, trying to make sense of what was happening, and what was to come. *A living being inside me, a living being inside me.*

I was being exposed to hormones that my body had never experienced before, some that didn't even have a name. Science had so ignored and overlooked the female body, not to mention the pregnant body, that it was hard to get a handle on what was happening. At the time, I had no idea that a number of hormones had increased

The emotional placenta

in levels by 200 or 300 times. The tiredness was unlike anything I had experienced before. I would get home from work and immediately fall into a thick sleep on the sofa. Turns out it's quite a thing growing another person. Who knew?

All this hormonal churn may be what stirred up the silt of my consciousness. Impressions from the past were unlocked. The look of melted butter on a crumpet reminded me of a long drive at a wedding and of hay on the ground at dawn; a copy of *Antony and Cleopatra* triggered a flash of a black iron grille at my aunt's home in London in the late 1990s; going underwater in the bath transported me to a shopping mall in Helsinki.

Time started to bend. I was carrying the future inside me. I would learn that I was also carrying the eggs, already within my baby's womb, that could go on to partly form my potential grandchildren. My future grandchildren were in some way inside me, just as part of me spent time in the womb of my grandmother. I was carrying inside me a pool of amniotic fluid, which was once rivers, lakes and rain. I was carrying a third more blood, which was once soil and stars and lichen.² The baby was formed of the atoms of the earth, of the past and the future. Every atom in her body existed when the earth formed 4.5 billion years ago. She will live for many years, I hope, when I have returned to the ground. She will live on the earth when I am gone. Time bends.

O

By twenty-three or so weeks, I was in no doubt of our plural state. The baby throbbed and I throbbed back with welcoming relief. At first I thought I must be imagining the movements: it seemed fantastic that there should be a creature within me. But soon she moved definitely, regularly. A nail scratching. A foot pressing. A hand exploring. A head turning. As she grew, I wrote down that it felt like she was making play doh figures with my innards. She moved my body independently of me. I was me, but not me. I was two.

I liked to watch my belly dome, and see her limbs move under

my skin. I would stroke where her foot or hand might be and press gently while talking to attempt to communicate with her. I tried to remember my mother's womb, to imagine what life must be like in there. The pulse of a heartbeat. The bubbles of stomach and intestines. The water sweet and hay-like. Held, comfortably suspended.

If I couldn't feel her at all I would fly into a teeth-gritted anxiety, terrified that she was ill or had died. I'd drink something sweet or eat chocolate and lie down to feel out for her. Usually she would move. If not, I'd go to the hospital to be monitored on a machine. I'd watch the red LED numbers of my heartbeat and hers, which was much faster than mine. Two hearts under one skin.

It was disconcerting sharing my body with another, a being with her own drive, her own future, her own vulnerable corporeality. I was confronted, for the first time, with my fundamental lack of control.

I didn't learn anything about these emotional or existential aspects of pregnancy in the week-by-week books or the apps, which mostly discussed the size of the baby in comparison to fruit. Kiwi, banana, pineapple. Even though most pregnancies involve a level of stress and emotional disturbance, such as anxiety, depression, worry, insomnia and impaired concentration, the information in pregnancy emails was about baby outfits and how much coffee one could drink. The psychological destabilization that came with being inhabited by another person was left unaddressed.

Overcome by the strangeness of it all, I began to fall silent. Barely any of my peer group had children. I had friends around for a birthday cake and a cup of tea and I barely said a word. At my baby shower, I felt behind a pane of glass. I couldn't convey what was happening to me. 'She feels herself vast as this world; but this very opulence annihilates her, she feels that she herself is no longer anything,' wrote Simone de Beauvoir of pregnancy, managing to describe the experience with uncanny precision.³

It reminded me of early adolescence. That old feeling of teenage awkwardness, of not knowing what was going to happen next, or how to be. Of finding myself in social situations as a fourteen-year-old and being shy, unsure of what to say or how to act and wide

open to judgement, criticism and the influence of others. Of being unsettled by the changes in my body, the growing breasts, the blood. Crimson on white tissue paper. A dawning awareness that this meant I was becoming a new being. My parents were emotional that day. I didn't understand it then, but I do now. The end of childhood.

In adolescence, though, there were rituals and rites of passage and songs and films and fashions and slang. We bonded and reinforced who we were becoming through music and booze and phone calls and outfits and gigs and poetry. We watched films about coming of age, read books about coming of age, listened to songs about coming of age. It wasn't easy, but it was expected, and we were together. In pregnancy, in matrescence, I felt alone.

O

I tried to find out anything I could about what was behind the existential rupture and brooding I experienced in pregnancy. But these perspectives took some time to find.

It wasn't just that they were missing from contemporary pregnancy books or health apps: the fields of psychiatry and psychoanalysis have almost entirely ignored how pregnancy affects a woman's mind, body and development. Repression and denial of the pregnant and maternal body and experience is deeply entrenched. Rosemary Balsam, of the Western New England Institute of Psychoanalysis, calls this absence the 'vanished pregnant body'.⁴ Indeed, I would discover that in Freud's twenty-three volumes of work there are only around thirty mentions of pregnancy.

It is almost as if the liminal pregnant state, the state of being two in one, no longer a discrete self, might make people feel uncomfortable. Balsam suggests Freud might've been referring to pregnancy and childbearing when he described how man 'fears some danger . . . [A] dread is based on the fact that woman is different from man, for ever incomprehensible and mysterious, strange and therefore apparently hostile.'⁵

Strange. I did feel strange, especially when I went swimming at the local lido. I walked out of the changing room, in my maternity costume, newly self-conscious, especially around men, especially towards the end. The male gaze felt different. Men averted their eyes from my spherical uterus. Was it because pregnancy is a sign of sex? Was I a symbol of bodily fluids – of ejections, seeping, slime, of the occult messy insides of the body? Was I reminding them of their own mothers and their early dependence? Was it, as Adrienne Rich suggests, simply that ‘he is reminded, somewhere beyond repression, of his existence as a mere speck, a weak, blind, clot of flesh growing inside her body?’⁶

I imagine it could have been, as the French philosopher Julia Kristeva writes, that, ‘I am at the border of my condition as a living being’, and this threshold state can be horrifying or sickening, for it reminds us of our corporeal reality, or, in other words, death.⁷

Finally, a couple of years later, when considering trying to have a second child, I found the work of the psychoanalyst and social psychologist Joan Raphael-Leff in a book called *Pregnancy: The Inside Story*, which was published in 1993. She explains pregnancy as a state of being between two worlds: ‘On a deep unconscious level, the pregnant woman hovers between internal and external worlds, at a crossroads of past, present and future; self and other.’

Raphael-Leff offered me a language to describe the ‘emotional disequilibrium’ and the reactivation of ‘dormant conflicts’.⁸ She developed the idea of the ‘emotional placenta’, where internal images and unconscious historical facts are the nutrients or poisons that influence the ‘mental gestation’ of pregnancy.⁹ She normalized the internal distractions which disrupt the ‘ordinary illusion of unified identity and indivisibility’. Looking back on the anxiety I felt, and the need for reassurance and monitoring, Raphael-Leff’s concept of ‘internal badness’ – the mother’s fear about her own moral shortcomings and whether the baby would be able to withstand them – was illuminating.¹⁰

At the time I found the disequilibrium highly disturbing but I can see now that it was an inevitable and necessary part of the process

of metamorphosis and a new, emerging concept of self. What was more difficult was the pressure to pretend that pregnancy was a less dramatic and drastic event than I felt it to be. Unlike in societies where ceremonies mark the transition from one stage of life to another, the pregnant woman in this ‘interim period of strangeness’, as Raphael-Leff calls it, is made to feel profoundly alone.¹¹

When we found out that our baby was a girl, my inner ferment deepened. I was nervous about bringing a girl into the world, and about how my relationship with her might play out. As I considered the daughter within me, long-forgotten senses, fears and feelings bubbled up. I looked at the predictions of climate breakdown and biodiversity collapse with a new intensity of alarm. She would be my age in 2047. How much of the Earth would still be habitable then?

It was heady. The baby was right there in the middle of it all. There was no hiding. I didn’t realize until later that the essential activity of my pregnant body – processing and metabolizing the ‘good nutrients and bad waste’ in order to feed the baby – would continue after she was born, through digesting and interpreting the baby’s psychosocial experience of the world until she is able to do it for herself. As Raphael-Leff suggests, the ‘container’ state of pregnancy is ongoing, perhaps indefinite.¹²

O

When I was around seven and a half months pregnant, or thirty-three weeks, London experienced a heatwave. I had a short-term contract editing at a trendy men’s magazine near Soho and would take a bus every day to get there. A new leadership team was in place and I hadn’t met them yet.

I put on a yellow and green oversized sack dress and left the house. It was early and quiet but the heat from the pavements was rising. Tomatoes in front gardens were punctured and collapsing. I was sweating by the time I heaved myself on to the bus. My feet were swollen with oedema so I wore large, ugly sandals. When I

pressed my fingers into my feet, the marks would stay for a while. My midwife told me that while sitting I should raise my feet. I would have to find some kind of box.

The new staff were younger and hipper than the ones I knew before. I didn't entirely get their jokes and references. They were all men, and the one woman I used to chat to had moved on. When I walked in I felt acutely aware of my pregnancy. People seemed to look away and avoid eye contact. Maybe they weren't expecting me, or my friend who left hadn't had a chance to tell them I had been booked in. When I approached the new editors' desks at various times of the day, I felt that they were willing me to go back to my chair. Was my massive bump making them feel uncomfortable?

I felt like Alice in the White Rabbit's house. In the 1951 film, she grows suddenly, her white-stockinged legs destroying everything in their way as they push through the ground-floor windows and doors, her arms squeezing through the upper-floor windows as the rabbit screams for 'Help! Assistance!' She is stuck: too much, too expansive.

I was asked by the boss to track down a drug dealer for an interview in a way that suggested he didn't think I could. He glanced at my womb and his eyes flicked away. I had, I realized suddenly, become 'mumsy'.

The heatwave continued. The bus journeys were getting harder with my swollen feet and growing baby. I decided that I couldn't commute any more. I had suffered from nausea for a few days and the heat and my body were not on good terms. I felt no guilt – unusually for me – about bowing out of the contract. I felt exceptionally calm and placid, pleasantly vague, like nothing could touch me. In those final weeks it was as though there was a force-field around me and the baby within. It was remarkably different to the low-level hum of anxiety I had lived with during most of the pregnancy. I'd made lots of normal social plans for that time towards the end, but my body seemed to have new ideas. I found that I wanted to be near home and I was happy to be alone.

Later I would discover that there are physiological changes

unique to the many discrete stages of pregnancy, including the very end. In the 1990s and early 2000s, researchers in the field of endocrinology – the study of hormones – found that as pregnancy advances the reactivity of the stress response system is dampened. It takes a larger dose, for example, of exogenous CRH (corticotropin-releasing hormone) to trigger an ACTH (adrenocorticotropic hormone) response, which stimulates the production of cortisol. In other words, the hormonal changes the pregnant body undergoes seem to dampen its reaction to stress towards the end of pregnancy, meaning that a woman in the later stages might feel relaxed.

In a study published in the *American Journal of Obstetrics and Gynecology*, the scientist Laura Glynn found that women in late pregnancy rated being in an earthquake less stressful than did those who were in early pregnancy.¹³ Women in the postnatal period, however, had similarly high stress responses to those in the first trimester of pregnancy. The data also suggested that the degree of stress experienced earlier on in pregnancy affected gestation length – women who experienced the earthquake sooner in their pregnancies had shorter pregnancies. From this, Glynn and her research group concluded that there may be a down-regulation of physiological and behavioural stress responses in late pregnancy. Why would this be? They theorized that increased immunity to stress may protect the mother and unborn baby from the negative impact of potential threats and raised cortisol levels in the final weeks.

A number of studies have found that women in late pregnancy develop a heightened ability to identify emotions in facial expressions. ‘Emotion-reading superpowers’, as Linda Geddes puts it in *New Scientist*.¹⁴ Late in pregnancy, it seems women can parse emotions associated with threat or harm – fear, anger and disgust – especially well. This enhanced emotional perception is associated with high levels of the hormone progesterone, which can increase by fifteen times during pregnancy (with previous studies also suggesting that this sensitivity in non-pregnant women increases when levels are highest during the menstrual cycle). Rebecca Pearson, a

leading researcher in maternal health, suggests this might be an evolutionary adaptation to prepare the mother to protect and nurture a baby and become more vigilant.¹⁵ But higher sensitivity could also make new mothers more vulnerable to anxiety.

Still, most of the information women are given in mainstream health literature relates the hormonal experience of pregnancy to physical characteristics – the body is preparing to make milk, the ligaments are relaxing to make room for the growing baby – or to the simple narrative that pregnant women might cry more at sad films.

Much of my life had been spent eye-rolling at gendered ideas about female hormones, which seemed always to stereotype and tether women. Even so, I had often taken the contraceptive pill throughout my menstrual cycle so as to avoid the business entirely, suppressing my cycle so I wouldn't have to bleed and could have more control of my body. I repressed these parts of myself that I deemed 'feminine', which would have me put in a box and labelled, in order to get ahead in a man's world. I had been afraid of being labelled 'hormonal' and not taken seriously. But in pregnancy, in matrescence, I had no choice. The neurobiological changes were so dramatic and uncontrollable that I simply had to find a way of integrating my new, female animal body into my sense of myself.

O

I was, on the whole, intrigued by the way my body was changing. While having lunch with a friend at a café, she asked, What are you thinking about feeding? I'm excited, I said. I think it's amazing that my breasts will produce milk. A couple of droplets came out the other day. It tastes sweet. How amazing that I can make milk! And it's free, and I think quite straightforward. You can do it wherever, you don't need any equipment. It will save us money for the first six months or however long.

I was breastfed, every mother I knew breastfed. Of course I would breastfeed. Breast is best.

Later that day, I sat in the hospital waiting room. We pregnant

The emotional placenta

women gave each other shy smiles. Some sat on their own, others next to partners. There was a hum of excitement in the air. A public service reel about breastfeeding played on an old-school TV in the corner of the room. Breast milk is great because mum will never run out, it said. I sat, in awe of my body, in awe of the fact I would be able to make enough food to sustain a baby's growth for six months or more.

We attended a class on feeding at the hospital soon after. A midwife sent a knitted boob down the row and showed us how the baby would latch on. We were instructed to wait until the baby's mouth opened wide and then guide the nipple into the mouth, giving the baby more of the flesh of the breast underneath than on top, and then guide the mouth over and on to the areola to latch on. We were told about the many benefits to mother and baby, and that it would help us lose our baby weight and shrink the uterus. We were told about supply and demand: how the body makes more milk, the more the baby feeds. How we should let the baby feed whenever they wanted to. There was a short section about formula milk, mostly focussed on how dangerous it could be if bottles weren't sterilized properly.

A man raised his hand. Can I help with the night feeds by giving the baby some formula?

The room went quiet. People's printed handouts ruffled and a fan whirred.

It's much better for baby to be fed directly from the breast at the beginning, or from breast milk in a bottle, said the midwife, coolly. After about eight weeks or so, once breastfeeding is established, mum can pump milk and then dad can help out.

My mind wandered into a milky reverie about how lovely it would be when my baby was out and I could feed her.

I'd put on quite a bit of weight in my pregnancy, so I was relieved that this simple action would sort that out. As my midwife said, nine months on, nine months off. I would shrink back to my normal state in no time.

O

One evening, I was discussing the concept of ‘womb envy’ with my husband. The theory is that, historically, men’s desire to work, create and to dominate women and control their reproduction arose because they were envious of a woman’s biological ability to bear children.¹⁶ It was an idea developed in the early twentieth century by the German psychoanalyst Karen Horney.

I don’t think that’s right, he frowned. Boys, kids, at school, nursery, are driven to do stuff, and make things, probably without a sense that they can’t carry a baby.

He found a thread on Reddit. It was titled: ‘I’m a guy and I wish I could be pregnant.’¹⁷

In the post, the writer explains how much he wishes he could experience pregnancy. ‘If it were possible to give me a uterus transplant I’d consider it,’ he writes.

The post had been voted 96 per cent ‘unpopular’. It was one of the most unpopular opinions ever seen on the forum.

The top comment was ‘Lmao wtf’, made by a moderator.

Others commented:

‘This is absolutely insane.’

‘I’d happily shoot my uterus in the face, so I can’t say I understand or relate. Out of curiosity, are you looking for the whole bleeding crotch experience too or just the pregnancy?’

‘No I will not deform my meats into a living house for another human being who will then claw their monstery way out of a way too small orifice.’

Hundreds of comments made by people disgusted by the idea of pregnancy.

Defensively disparaging birth and pregnancy is a consistent feature of Western misogyny, which the writer Siri Hustvedt suggests might be summarized as: ‘it may look as if pregnancy and birth are all about women, but they’re really all about men.’¹⁸ Hustvedt quotes the anthropologist Margaret Mead, who wrote that it is men ‘who spend their ceremonial lives pretending it was they who had borne the children, that they can “make men”’.¹⁹

This strange pretence, with its strong whiff of envy and anxiety, is

The emotional placenta

smeared all over the historical sources of wisdom that we cleave to. Here's Aeschylus: 'The one who gives birth is the man who impregnates her.'²⁰ Here's Thomas Aquinus: 'Woman is defective and misbegotten, for the active force in the male seed tends to the production of a perfect likeness in the masculine sex; while the production of woman comes from defect in the active force or from some material indisposition, or even from some external influence.'²¹

The extremity of the outpouring online was interesting to me. Horney and Kristeva might chalk it up to a masculine fear and loathing of the generative power of the mother.

Here's what the commenters didn't know. Despite the challenging symptoms, both physical and emotional, being in the closest possible physical relationship with another being was one of the most enlivening, wild and interesting experiences of my life.

Eels

The eggs of the European eel hatch in the Sargasso Sea.

The eel larvae are transparent, and look like scraps of see-through ribbon or Sellotape with eyes and teeth. They join the Gulf Stream and travel for 5,000 kilometres through the Atlantic Ocean, and when they reach the edges of Europe, after a year or two of drifting, they change into glass eels. In this stage, the eels are still see-through but thinner, like cellophane noodles. As they enter new habitats – freshwater, brackish waters – they darken, and change into elvers. While living in the freshwater, they mature yet again into yellow eels, fattening and growing over six to twenty years. When they are ready to reproduce, they transform into silver eels with a metallic body and larger eyes.

Five life stages, thousands of kilometres and multiple habitats later, they return to the Sargasso Sea to spawn and die. Some European eels live for half a century. Human activity – including habitat destruction and overfishing – has led to a 95 per cent decline in forty years.

3. *Zombie Cells*

This is where it transpires whether subject and object separate in the sense of the classical knowledge relation, or whether the subject enters the object to such an extent that the latter gives up its object character, indeed its presence and capacity for opposition as such.

Peter Sloterdijk, *Bubbles*

Twenty-first-century biology is fundamentally different from twentieth-century biology. It is a biology of relationships rather than entities. The biology of anatomic individualism that had been the basis of genetics, anatomy, physiology, evolution, developmental biology, and immunology has been shown to be, at best, a weak first approximation of nature.

Scott Gilbert, ‘Rethinking Parts and Wholes’

Towards the end of pregnancy, when I felt sick or sore or tired or scared, I looked forward to having my body back: to being just me again, able to eat cheese and unlimited chocolate and drink five coffees a day. I thought, then, pregnancy was transient, a nine-month event, that my body was a box to grow a baby in. Once she was out, I’d return to my normal self.

Not so fast. During pregnancy, cells are exchanged between the mother and foetus via the placenta. When the baby is born, some of those cells remain intact in the mother’s body. For decades.¹ Perhaps for ever. The phenomenon is called microchimerism. The exchange

creates what the leading geneticist Dr Diana Bianchi calls a ‘permanent connection which contributes to the survival of both individuals’.

Cells have been found in subsequent siblings, too. If you have a younger brother or sister, they may have your cells within them, and, if they are older, their cells may be within you. Maternal cells also remain in the child. Dr Bianchi and her team also found that a live birth was not required for a woman to ‘become a chimera’, meaning an organism containing cells from two or more individuals. Women who have miscarried will likely carry foetal cells within them.

How does this cell exchange happen? Humans have one of the most invasive placentas among mammals. The human placenta invades around one hundred uterine vessels and arteries and grows thirty-two miles of capillaries. If the capillaries in one placenta were laid out on the River Thames they would stretch across the entirety of London. The tissues formed by the placenta to keep the baby alive would cover the floor of a small room (120 to 150 square feet). The invasiveness of the placenta means more cellular exchange, which would suggest humans have more microchimerism than other species. When I was pregnant with my second child, after learning about this phenomenon, I was in awe of the placenta within me, and a little bit intimidated. It enabled the baby to eat and drink me.

In 2012, a research group in Seattle conducted a post-mortem analysis of the brains of fifty-nine women who had carried babies.² Almost two thirds – 63 per cent – of the women had traces of DNA from foetal cells in their brains. Foetal cells have also been found in the liver, heart, lung, spleen, intestine, uterus, kidney, lymph nodes, salivary glands, heart, blood and skin. The baby’s impact on the maternal body extends far beyond the womb, endures long after delivery.

Why are these cells sticking around? What are they doing? How do they influence maternal biology and experience? There is a range of hypotheses.

Dr Amy Boddy, a biologist at the University of California, Santa Barbara, takes an evolutionary approach to the subject.³ In the 2010s,

Zombie Cells

while studying breast cancer and reading the literature, she discovered that scientists had found foetal cells in tumours in the breast.

‘I thought: that’s weird,’ she told me, over Zoom from her home in California. She dug in a little more and found that foetal cells were also remaining in other tissues in the maternal body and specifically in ‘really interesting, reproductively important tissue’ that might play a role in maternal health.

She started working in this area while pregnant with her second child. Unlike her easy-going first pregnancy, she found the second demanding and exhausting, which drove her interest in the conflict between foetal and maternal systems. Sometimes the baby *wants more than the mother can give*.

The lingering cells may just be a by-product of the lodger’s exit. But, in Boddy’s view, they must be there for a reason – possibly to do with the baby’s survival.

‘Over one hundred million years of evolution, there is definitely time for manipulation of the maternal system,’ Boddy said, likening it to an insurance policy for after the baby is born, especially in humans where infants require intensive parental care.

One theory links it to breastfeeding. Foetal cells in breast tissue might help lactation, which is in the baby’s interest. They may also trigger the expression of important hormones in the maternal body, such as prolactin or oxytocin, which are respectively associated with feeding and bonding.

The impact of these microchimeric cells is a controversial and contested area of research. The presence of foetal cells in healed Cae-sarean section wounds suggests they could migrate to the site of damage to help in repair. But they’re also found at sites of disease, which could suggest they may have detrimental roles. Pre-eclampsia – a common but serious condition in pregnancy which raises blood pressure – is associated with an over-proliferation of foetal cells. Foetal cells are also strongly implicated in the pathogenesis of autoimmune diseases, such as Graves’ and Harishoto’s, as well as thyroid disease and inflammation that might contribute to post-natal psychiatric illness.

Still, we don't know what the cells are doing at the sites of disease. They may have protective and regenerative roles: participating in tissue repair and regeneration, cell replacement or homeostatic maintenance. Women who have had children are more likely to survive lung cancer, which suggests that foetal cells – which establish in the lungs in particular – might suppress tumour development. They may have neutral roles, and be mere by-products.

The picture remains paradoxical. The interests of the mother and child are aligned in some areas but in conflict in others – both in pregnancy and once the baby is born.

Boddy suggested the research into foetal cells was in a similar place to microbiome science at the turn of the century. 'People said, there's bacteria and it's important but we don't know much about it. And now we know it's very, *very* important for health. We're at that stage of microchimerism where we know we have this diversity of cells within us but we don't know how important that is yet.'

Bianchi's landmark paper on microchimerism describes pregnancy as enacting a 'long-term, low-grade chimeric state in the human female'.⁴ From the moment I was pregnant, I didn't just feel different. I *was* different. I *am* different. On a cellular level. I would never be singular again.

O

Everything was ready for the baby's arrival. We had bought soft new vests and jumpsuits and friends had passed down clothes and slings. The baby would sleep in a family Moses basket and we had swaddles and a car seat. I learned that I would bleed for a while after giving birth, so I bought a box of sanitary towels. That was it, I thought. Nothing I had read or heard suggested that what would come next would be a time *I* needed to prepare for.

I would end up needing around twenty boxes of specialist maternity pads for the blood loss following the birth.

In a meta-analysis of pregnancy lay literature and popular child-birth literature, academics Jennifer Benson and Allison Wolf found

that the emotional and physical challenges of the postnatal period were ‘minimally acknowledged or simply ignored’.⁵ A major pregnancy book called *Your Pregnancy* dedicated just 0.08 per cent of the book to maternal care after birth. Sections on maternal recovery focussed on hair loss and weight loss.

Benson and Wolf conclude that the erasure of postpartum women in pregnancy and childbirth literature – what they call ‘the invisible postpartum mother’ – is a form of misogynist oppression. They build on Sandra Bartky’s theory of psychological oppression, in which the oppressed experience a ‘lack of a viable identity’.’Frequently we are unable to make sense of our own impulses or feelings . . . because we are forced to find our way in a world which presents itself to us in a masked and deceptive fashion.’⁶

It is no surprise, then, that a 2018 study by researchers at the University of Louisville, Kentucky, found that women leaving hospital after giving birth did not know about the risk factors for maternal mortality and problems, including mental illness. Over 60 per cent had no idea that pregnancy-related complications can occur for up to one year after birth.⁷

O

In the final days of pregnancy I hauled myself out of the house, barreled down the road and into a local park. The boundaries between myself and the rest of life here were thinner, more porous. I felt open to the processes around me, as if the membrane of my consciousness was stretching, like the taut skin across my stomach. I lifted my hand to stroke the bark of a plane tree. I was starting to find more of a mirror, or a sense of kinship, in the natural world than I did in any of the books or leaflets I read, or the stories I heard, which failed to provide a compass for the existential upheaval I was experiencing. I was beginning to understand myself in a new way, as an ecological being. Suddenly, I smelt flesh. I lifted my head. It smelt like meat, blood, burgers, salt. I looked around and saw a shape on the ground. My eyes focussed and I walked towards it. It

Matrescence

was the wings and remains of a bird. The feathers were striped in light and dark brown and its body had been removed. All that remained were the soft wings and strands of sinew, tissue and blood on its skeleton and cartilage. The smell was so strong I had to walk away. The bird would degrade and disintegrate, as my baby strengthened and fattened.

I imagined how she must feel in my womb, cramped and tight, warm and soft, bound by the elastic walls of abdominal muscles and fascia. A house within a house. She could be touching the blue ribbed scarf of the umbilical cord, waiting for the pattern of food she had become used to. I thought about how life started, for all of us. That experience we all have in common: we began in a body, in loud fluid, within a tight space, a dark, wet, rhythmic nest, in a being also becoming. Our first world.

I felt a great sense of responsibility to bring her safely on to the earth. Tears of tension fell. My patience waxed and waned. The world was beautiful. Colours were vivid. Birdsong was a symphony. Then, I would be fed up. I couldn't sleep. I couldn't talk. I was obsessed with the baby's departure from my body, our first uncoupling. Aquatic to terrestrial, dark to life, occult to revelation, small hot cave to earthly consciousness. Memories of childhood teachings about Ruach from Genesis – the spirit that moves over the face of the waters – lapped over me in the early hours of the morning.

The magma was melting, the mantle would shift, and soon there would be an eruption, though I didn't know exactly when, or what form it would take.

PART II

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