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Introduction

A GUSH OF BLOOD

ON THE afternoon of December 8, 2016, I started bleeding. I was eight weeks pregnant.

I was at work and thought I felt some cramping and perhaps a gush of blood. At first, I didn't comprehend what was happening and continued to respond to emails. When the wet sensation in my pants became impossible to ignore, I closed my office door, pulled my blinds, and had a peek. I was definitely bleeding. I fumbled through my filing cabinet until I found a menstrual pad and slapped it on over the mess. Another little cramp sensation, another gush, probably just a few tablespoons, but when it happens all at once it feels like a lot. I called my spouse in an absolute panic. A professor at the same university, Brendan works just across the street. He offered to bring the car for me. I said I could walk it.

Our parking space was in an underground garage just a few blocks away. My heart raced, and I fought for control over my emotions. As we crossed the final street before the garage, a massive wave of cramps—contractions, really—rocked through me. I stopped, almost collapsing. The sensation startled and scared me enough that I bent over, breathing hard. Brendan grabbed hold of me, and after a few steadying breaths, we finished the trek to the car and hurried home.

I remember being in my body through the experience but also outside of it. I must have sat on something to keep from getting blood on

the car seat, but I don't remember what. Back at our house, I called my ob-gyn's office and told them what happened. The nurse I spoke to was kind and professional. She said I could go to urgent care that night for an ultrasound, but it wouldn't change things, and it would be better if they could see me. We scheduled an appointment for just after ten the next morning.

After one more bout of cramps and blood, I appeared to be done. Brendan went and picked up our kid from his after-school program while I lay on the couch. I put my hand on my abdomen—did I feel anything there? A connection? A sense that I was pregnant? I had already been dealing with nausea and bloating for a few weeks. Had it gone away? I tried to calm down, reminding myself that whatever was happening, there was nothing I could do. And yet there was a nagging feeling that, if I was miscarrying, I had clearly done something wrong.

My mind raced back through the past several weeks. I had gone to some roller derby practices, just to skate around. I had gone to gentle yoga—the kind where you do little more than lay in different positions for excruciatingly long minutes. I had endured an IVF (in vitro fertilization) cycle for this child—weeks of injections in my stomach, ninety-minute trips each way to our doctor, an outpatient egg aspiration on Halloween, an embryo transfer five days later, and a positive test a few days after. I started bargaining with my uterus. *I'll be really good*, I promised. *I won't lift heavy objects; I won't let my heart rate go up; I'll stop eating all the foods I love. Just let me have this kid.*

Was I so in love with this embryo? No, not exactly, though in my head I had projected the rest of the pregnancy—of sharing the news and watching my belly grow and feeling movement and holding a baby in my arms. The truth was that I just couldn't bear the idea of going through it all again. I'd been through two failed transfers, leftover embryos from the IVF round years ago that had led to our first child. I'd already bled during this pregnancy, just weeks before. I wasn't sure that I mentally had what it would take to go through the medical procedures and anxiety of a fourth attempt. In my head, I alternated between a story in which we stayed a family of three, or one in which we decided to try

again. Even as I kept telling myself the pregnancy could be fine, I didn't quite believe it.

The next morning, we got our kid off to school and went to our appointment. The transvaginal ultrasound was a little uncomfortable—I was a little tender. I explained to the tech that I had bled and cramped a lot the night before and was preparing myself for this being a miscarriage. Almost immediately, she found the gestational sac, the embryo, and the pulsing of cardiac cells at the expected speed. I know it's not a heartbeat, but that's what people often call it; and it felt in that moment like a heartbeat. The size and stage of everything was exactly as it should be; the little guy was very much still there and growing along. I burst into tears. The tech, surprised by my outburst, began to cry herself. "Oh, you really did think you had miscarried, didn't you?" she said thickly. I could only nod.

Weeks later, when I talked to my infertility doctor over lunch—it's a small town, and he's since become a professional collaborator—he told me that sometimes capillaries just burst. Picking through a meal I was largely too nauseous to eat, I tried to wrap my mind around how something that hurt that much, that was so bloody, wasn't a miscarriage. But I didn't give it further thought at the time, instead I focused my attention on what was going well. I had required intervention to get pregnant because my spouse is a two-time cancer survivor; if the treatment from the first cancer didn't render him infertile, the treatment from the second certainly did. Once pregnant, I wanted to leave everything alone and let my uterus do its job. I considered pregnancy, at least beyond the first trimester, to be an inevitable process toward a baby—and I wanted to keep thinking of it that way. But the two bleeds I had experienced, even though they proved not to be miscarriages, shook me. I had to reckon not only with a more precarious understanding of my pregnancy—I spent the rest of it distressed and waiting for something bad to happen—but also with a more precarious understanding of all human pregnancy.

As an anthropologist who has spent most of her career studying the nonpregnant uterus, I had supposed early miscarriages were a sudden gush of blood, a heavy period, and then it was over. I thought they were

largely a result of bad luck and the particular perils of our evolutionary path to sexual reproduction. It turns out I didn't know the first thing about them.

Pregnancy Lost

This book is about pregnancy loss—from the very early losses before you even know you are pregnant, to miscarriage, stillbirth, and abortion. And what I've learned is that we have to completely disassemble how we think about pregnancy in order to describe what these "losses" mean, why they happen, and what we need to do about them.

There is a certain cultural narrative that exists, especially in North America and Europe, that pregnancy is a linear, predictable process. You will feel like garbage the first trimester, wonderful the second trimester, ginormous the third. The embryo and fetus will progress in size in a linear, predictable way. Popular baby websites often mark these moments with comparisons to fruit—your baby is a seed, your baby is a strawberry, your baby is a cantaloupe. On the medical side, pregnancy progresses through a series of prenatal care measurements: the twelve-week scan, the twenty-week scan, the glucose screen for gestational diabetes, the group B strep test. There is an inevitability to the process—it is a process that, except for some unfortunate aberrations, will result in the birth of a healthy child.[1]

This simple story of pregnancy obscures two fundamental truths. The first is that pregnancy loss, far from being unusual, is central to pregnancy—it is, in fact, the most common outcome. In the United States, for instance, it's estimated that there are about 3.6 million babies born a year, 1 million miscarriages, 620,000 abortions, and 20,000 stillbirths. Yet these figures fail to take into account the losses we'll be discussing that occur before someone might know they are pregnant, between the moment sperm and egg fuse and any symptoms may be felt. These very early losses account for several million additional losses comprising 30–50 percent of all pregnancies.[2]

If these figures come as a surprise, you are not alone: our society tends to treat pregnancy loss as anomalous and, as a result, pregnancies

that end in loss remain stigmatized, understudied, and underresourced, and their pain—physical, emotional, and psychic—unmanaged. Media portrayals of pregnancy loss, for instance, often present it as a mere gush of blood, ignoring the contractions and labor-like pain for some and the weeks of discomfort and bleeding for most. Miscarriage is, at most, represented as a detour on a way to the next plot point, the happy ending where someone gets pregnant again and this time progresses to a full-term pregnancy. These assumptions are baked into the physical structure of our healthcare system, which supports a sense of inevitability regarding full-term live births. People do not receive counseling or information about miscarriage, stillbirth, or extreme prematurity until it happens to them. They are offered tests to assess their child's chances of death or disability, without having those tests—or the choices that may follow—explained. The way most hospitals are currently set up, people having stillbirths are forced to labor in delivery wards, among people bearing live infants. In each of these instances, our medical system operates in a way that leads the patient to assume that pregnancy ends well for everyone, that pregnancy loss is the anomaly.

The second fundamental truth: this simple story of pregnancy obscures the fact that the *process* of pregnancy, far from being straightforward or inevitable, is one marked by significant uncertainty. The home pregnancy test, the ultrasound, preimplantation testing of embryos, and various screenings each offer certain promises to the patient—to reduce a pregnancy to a "yes" or "no," "healthy" or "not." Prospective parents yearn for everything to be definite. Yet, as we will encounter time and again in the chapters ahead, this reductive approach is often misleading. Pregnancy is a space of potential rather than one where we can predict the outcome, and we do pregnant persons a great disservice when we hide this uncertainty beneath a false veneer of scientific rigor.[3]

Similarly, medical, wellness, and cultural authorities tell women which activities and medications to avoid, which food and substances to cut out, and how much weight to gain or lose, with a confidence that suggests that preventing pregnancy loss remains within one's own individual power. Yet these authorities tend to overstate their understanding of the risks to pregnancy. Indeed, because legislation long prohibited

the participation of pregnant people in clinical trials, we have little information about how most drugs affect embryos and fetuses: less than 10 percent of the drugs approved since 1980 have enough evidence to assess risk, and most drugs are approved without any early-phase clinical testing on pregnant people at all.[4] Moreover, as we will see, the causes of miscarriage are much more frequently well beyond the control of any individual.

Early miscarriages are often an inevitable aspect of human reproduction. That is, the genetic errors that frequently make pregnancies inviable are part of the evolutionary makeup of what it means to be us: sexually reproducing mammals who invest loads into each of our offspring. The consequence of a system that prioritizes creating single, slow-growing, high-quality offspring is that it generates a high volume of faulty eggs and embryos along the way. You can't make an omelet without breaking a few eggs . . . literally. Later miscarriages, meanwhile, are often the product of broader environmental and structural factors. Our increasingly polluted environment, our refusal to take measures to reduce the spread of communicable diseases, and our medical system's tendency to engage in racialized obstetric violence all pose serious threats to pregnancy—threats that we, as a society, could do much more to minimize, even if no single individual could avoid them on their own.

In the pages that follow, I will challenge the simple story of pregnancy. If we can dig our way under the cultural assumptions and stigmas that often cloud discussions of miscarriage, what can we learn from the science below? Can anyone really tell us why miscarriages happen?

Throughout the book, I'm going to lean hard into the science of pregnancy loss. There are many answers here, and it all starts with the hot mess of mammalian reproduction. We'll be learning together the vagaries of cell division and genetic errors, not to mention how this intersects with the various promises that pregnancy technologies sell. While it's tempting to want certainty when it comes to pregnancy, we will come to appreciate that uncertainty is a constitutive feature of pregnancy, and one we need better tools for navigating.

If we want to understand pregnancy, and how parental-fetal interconnection really works, we also need to figure out why this topic has

proven so elusive for Western science, conceptually. We'll spend some time with the Western myths of pregnancy, from the "floating fetus" to the "placental barrier." We will see how our understanding of pregnancy changed with the discovery of teratogens—substances, exposures, and pathogens that can cause harm to or even kill a fetus.

To address these issues, we must confront the reality that how we communicate risk to pregnant persons, along with the embarrassing lack of regulation and public health measures to reduce these risks, has created a dangerous environment for anyone who wants to get and stay pregnant. This book is my attempt to present the evidence and at least some of the way forward, thanks to my having talked with a lot of very smart, caring people. The knowledge I present in this book may comfort, it may enrage; as with a pregnancy itself, our attitudes about it may shift given our own situations and needs. But while I resist the idea that this knowledge points toward a clear outcome or answer, it does point toward an urgent need for change—change in how we treat pregnant people, and change in how we understand and approach the systems that shape our government, our climate, and our built environment. We have to live in more uncertainty, give ourselves more time and support, and be willing to care for each other.

The topic of pregnancy loss—and the many people who suffer silently with it—deserve this moment of reckoning. We have to abandon the assumption that a live birth is the inevitable conclusion of pregnancy. Pregnancy—and every possible way it can end—needs space to be its own thing. I'm going to try to create that space.

On Words and Their Meaning

In this book, you are going to encounter some jargon—jargon with which even I wasn't always familiar before starting to work on this topic. I'll do my best to define terms and explain what I mean in a way that allows us to go on this journey together. I also want to be clear here about how I will talk about loss, and how I will talk about pregnant people themselves. I use the term "pregnancy loss" to encompass many different outcomes, from embryonic demise that occurs before

implantation has even happened, to a full-term stillbirth. Intentional terminations—medical termination for a fetal anomaly or because of danger to the pregnant person, as well as abortion for any other reason—are types of losses as well. And the death of a pregnant person counts to me as a loss—a very real threat and something that happens, depending on your definition, to between 700 and 1,200 people in the United States each year.[5–9] At the same time the word "loss" does not appropriately encompass this range of experiences. While it may be apt for early miscarriages, it is fully inadequate for, say, a stillbirth. As Jill Lens, a legal scholar and stillbirth parent herself, said to me of whether "pregnancy loss" fits her experience with her son Caleb, who died at thirty-eight weeks: "I didn't fucking *misplace him*."

There is no good word here—another way in which the inevitable progress narrative of pregnancy fails us. We live under the assumption that the normal condition of pregnancy is that it goes to term, and so we lack familiar ways of talking about the endless variations of endings that, taken together, are more frequent than live births. Part of the inadequacy of the word is that "loss" carries a negative connotation. Many people, when a pregnancy ends without a live birth, feel ambivalence, relief, even joy.[10–12] Our understanding of the worth of our own pregnancies and how we might feel about them is subjective and contextual.[13]

Lens also feels tension around the word "fetus." When she writes about miscarriage and stillbirth, it's what she uses when she needs a medical term for beings between about ten weeks' gestation and birth. But that's an enormous range of development, attachment, and growth, and like me, she finds herself following the lead of people who have experienced loss, which means she also uses, and prefers, terms like "baby."

Lens points out that various legal systems and medical organizations have three different cutoffs for stillbirth alone—twenty, twenty-four, and twenty-eight weeks—which shows how arbitrary it is to try and categorize types of losses. Keeping to a later cutoff for stillbirth, in Lens's view, creates a firmer line, making clear that these are the types of losses that in many cases should have been preventable. Yet marking one of the earlier points as a stillbirth (versus a miscarriage) is more

inclusive of the kinds of interventions and experiences birthing people have. I mentioned to her that I've interviewed several people who had to give birth to a dead fetus and whose pregnancy was labeled a miscarriage instead of a stillbirth because the birth occurred just before the twenty-week cutoff. In response, she said, "I don't want to devalue anyone's experience. The distinctions in experiences are easiest to see at the extreme, a miscarriage at six weeks versus a term stillbirth. Those distinctions disappear when comparing pregnancy loss at nineteen weeks and six days versus twenty weeks and two days. Yet the lines between miscarriage and stillbirth differentiate these ridiculously similar experiences." Foreshadowing debates that I consider in an upcoming chapter, our discussion shows the consequences, good and bad, of legal bodies, insurance companies, medical doctors, or professional societies picking a line.

The conversation on when a loss is a miscarriage versus a stillbirth reminds me of an experience I had recently when I was presenting some of my work to an international audience. At the end of my talk, an Italian colleague admitted to me: "I had to look up some of the words you just said because we don't have them in Italian." What did she mean? "We use *aborto* for all of those words; we don't have 'miscarriage' and 'stillbirth' and 'termination' and 'abortion.' It's all *aborto*, and then we might qualify it if we need to."

It turns out this trend in the English language, to parse pregnancy losses with a variety of terms, is barely fifty years old. Before that, we also used "abortion" as the term for everything and qualified it as needed. Doctors in Great Britain in the 1970s and 1980s pushed the proliferations of terms for pregnancy loss after two major changes to the abortion landscape: legal restrictions to abortion were eased, and ultrasound technology made it possible to image the pregnant uterus better than ever before. A new subspecialty, perinatal medicine, quickly embraced the term "miscarriage" to describe early losses. This terminology, the doctors claimed, should be adopted for "empathetic" reasons, though their true motivations were transparent: the new terminology was an attempt to make such losses medically distinct and assert their authority to treat this specific condition.[14]

As we'll see, regardless of the label, the medical tests and treatments received by a person going through one of these experiences is identical. And the lines between early and late, grief and relief, wanted and unwanted are not as distinct as we've been led to believe. Even with all this parsing, conversations in reproductive rights circles tend to leave out most of these losses: there's full-term pregnancy, or abortion, and seemingly nothing in between. As Jill Lens said to me, "Every pregnancy either ends in abortion or live childbirth, that's it. Caleb does not exist." Losing that middle space—all those other pregnancies? "It's mind boggling!"

The stillbirth parents are also the ones most on my mind when I think about the terms we use to describe people who can get, or are, pregnant. Inclusive language and awareness raising often precedes the kinds of policy change that then make certain people and their experiences structurally visible and countable. It took stillbirth parents advocating on behalf of their dead children before they were able to obtain stillborn birth certificates for them; similarly, those seeking to raise awareness of pregnancy mortality managed to get a checkbox for "pregnancy" added to death certificates. The language we use, and the size of the tent we create, have implications for the kinds of data we collect and the kind of changes we may seek.

With that in mind, I use terms like "pregnant person" to describe a person who is pregnant. I also use "person who can get pregnant," "person with a uterus," and other terms that do not define the gender of the person. Other times, terms like "woman" or "mother" or "pregnant woman" are most apt, either because the study population of a published article is clearly talking about women as a specific group, or because the cultural construction of womanhood or motherhood is especially relevant to the issue I'm discussing. I'm a scientist, one who likes specificity and accuracy. If it's not accurate to say "pregnant woman" or "mother" because not all people who are pregnant are women nor are all mothers the birthing parent of their children, why would I use them? Children can get pregnant. Nonbinary people, and men, and lots of other people among a range of gender categories happen to have uteruses. Not only do ethics and science agree on terminology here, but to adopt these naming practices can help us better uncover

queer and transgender pregnancies, making it easier to include their experiences.

Gender and sexism are, of course, still relevant to the questions of pregnancy loss and can be crucial in understanding why they happen and why it seems that so little has been done to reduce risk of them. Repairing and reducing harms isn't the same as doling out slices of pie, where there is only so much to go around. We can consider the ways in which sexism, racism, homophobia, transphobia, and other biases reinforce stigmas around pregnancy loss and produce the structural inequities that make such losses more common. Certainly, most of the people who experience pregnancy loss are women. But I'm not convinced that overattention on the dominant experience is what we need to solve this problem. We are already operating in a space where those pushed to the margins are heard from the least, as white, cisgender women married to men tend to dominate those few conversations that currently take place regarding pregnancy loss. For instance, as multiple people I interviewed pointed out to me, the vast majority of stillbirth advocacy nonprofits are run and staffed by white women, even though Black women experience a stillbirth rate double that of white women.[15] What might we uncover by taking more care with our language? Who might we invite in? What might change?

My own experience of embryo losses, and two first-trimester bleeds, were colored by the culture in which I live. This culture, which nudges our concepts of personhood ever earlier in pregnancy, is in turn shaped by technology and the law. The experience of pregnancy is different when you can know precisely when implantation happens, or when the laws in your state or country shorten the time you might need to decide whether to have an abortion. Over the course of this book, I show how science, technology, culture, and the law are not discrete elements of our society but overlap and feed back on each other, and when it comes to pregnancy, they create certainty and progress narratives that are not natural at all, but constructed. We can do better. Let us develop a more capacious, more attentive, more compassionate understanding of pregnancy and pregnancy loss.

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