

# **New Science, New Practices: Slowing Down at Birth for Vulnerable Newborns**

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**Abstract:** Increasing attention is being given to mechanisms by which environmental influences during early critical periods in human development have the potential to affect human health and well-being over the long-run. Appreciating how babies experience their environments during the sensitive period around birth could aid birth professionals and parents to help babies cope with and heal from adversity if it occurs.

**Keywords:** Childbirth, Environment of Birth, Childbirth Education

After poking along for a night and a day, labor was suddenly moving fast with contractions coming strong and close. Rachel, a prenatal yoga teacher, and her husband Jonathan, a farm-to-table chef, were deep into labor with their first baby. I was present as their doula. With new, big contractions and the hint of a grunt, we left Brooklyn for their Manhattan hospital. When we arrived, the midwife told us that Rachel was fully dilated.

Rachel started pushing. The baby, in turn, began experiencing category III decelerations; the fetal heart rate was dipping into the 80s, 70s, and 60s. The midwife told us we would do everything to get this baby out as quickly as we could. Rachel made a fantastic effort and with the eventual help of a vacuum, a boy was born, eyes wide-open, cord wrapped elaborately around his neck and torso.

Things moved quickly. “Pull your baby to you!” the midwife called as she unwound the cord. “I’m not ready I’m not ready I’m not ready!” Rachel cried. The midwife placed the baby on Rachel’s belly. Someone cut the cord. The baby gave a cry and a nurse lifted him high into the air and towards the exit. I nudged Jonathan and he raced out of the room, following his under-a-minute-old son down the hallway to the nursery.

Rachel caught her breath, and I caught mine. I’ve attended hundreds of births as a doula. I knew that one of two things was likely to happen in the next few minutes. We would hear that the baby was fine and would return to Rachel after a period of observation in the nursery. Or, we would be told the baby would be going to the NICU. An idea hit me for a third option. I’ll call it the slow option. I’d never seen it happen before under these circumstances in a hospital, but why not?

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## The Birth Pause: Slowing it Down at Birth

My inspiration for this third, slow alternative sprang from trainings and conversations over the years with Karen Strange, a Colorado midwife who has taught over 8,000 people in her course “Integrative Resuscitation of the Newborn.” Karen spends much of the year on the road teaching so that doctors, midwives, nurses, doulas, and parents can understand a new way of connecting with babies and assisting babies—especially those who struggle at birth—in this context.

I met Karen six years ago on one of her early New York City workshop tours. I had signed on for my first training with Karen thinking that, as a busy New York City doula who had unexpectedly caught a few babies over the years, brushing up on the basics of reviving a newborn would be the responsible thing to do. I had anticipated—with some dread, I’ll admit—a day of “one-one thousand, two-one thousand” along the lines of every CPR class I had ever taken. As it turned out, I learned the basics of neonatal resuscitation, but the scope of the workshop was vast. In particular, I was intrigued by Karen’s suggestion that our hurry-up birth culture might be skipping over something hard-wired in the moment a baby is born.

Karen shared an evolutionary perspective, reminding us that birth is designed to work in case no one else is there. “What is in birth in the original?” she asked, and, “In our routines of care for mothers and babies, are we interfering with critical elements in this design?” She described a natural sequence—or blueprint within an age-old template—that includes a slow, mother-baby resting phase at the moment of birth. As I listened to Karen, it seemed probable that as early humans (and pre-humans, and pre-pre-humans) wired for birth through the ages, mothers would have likely birthed babies down onto a surface below, and then rested, as the baby transitioned from gas-cord oxygenation to lung breathing. Once a mother recovered somewhat from her efforts, she would have turned her attention to the baby before her and, studying and discovering her newborn, gathered the baby in. Karen described this slow meeting as a time when a mother and baby begin to integrate all that has happened, a pause that readies both to move forward to breastfeeding and attachment.

Valeriana Pasqua-Masback, a New York City home birth midwife with whom I frequently work as a doula, had also heard Karen speak and began putting these ideas to the test. Instead of handing babies directly to their mothers as she had always done, Valeriana experimented with guiding babies down where they were born, below or before their mothers. She left the moment of meeting to the woman, her partner, and her baby. At births with Valeriana, I observed this slow meeting. I saw mothers take the time they needed to shift focus from the work of birthing to the meeting of the baby. I watched women study their babies, sometimes for long periods, either talking to the baby, or in silence. Often they would kiss their partner, with the baby resting below. They would then reach out to touch and caress the baby, and then, when ready, they would gather the baby in, each woman on her own timeframe.

Remarkably, the quick pass of a baby to its mother at the moment of birth—so naturalized for me that I hadn’t given it a thought when my sons were delivered to my chest—came to seem like something of an intervention. It is unquestioningly a warm gesture that says, “This baby belongs to you. Here is your child.” And it represents a victory over the bold experiment we conducted on a massive scale in the twentieth century: we separated mothers and babies at birth. Reclaiming this connection has been singularly important and handing women their babies as they are born is an important course correction. But with this battle at least partially won, I began to see that we can trust birth even further and do less. We can slow down, pause, trust the women who have grown and birthed these babies to find and welcome their babies on their own time, and allow babies an experience of rest and integration, even in the moments of their arrival.

Valeriana and I were so excited by what we were seeing that we invited Karen to spend a day with us brainstorming. We decided to call this moment “the birth pause” and I began writing about unhurrying the moment of birth. Weeks after I submitted my first article on the birth pause for publication, I met my third child this way. I was astounded at how powerful it was to truly see my baby as she arrived below me and take the time I needed to study my daughter before I picked her up for our first embrace (Malloy, 2011).

I had since witnessed the birth pause in hospitals, but conditions were always straightforward. If meconium was present, if there were breathing difficulties or other concerns with the baby, the cord would be cut immediately and the baby would go to the warmer for procedures, or, as was the case with Rachel's son, off to the nursery. As I stood at Rachel's side, I contemplated alternatives that might offer, or have offered, Rachel, Jonathan, and their son an experience of a slow meeting, a sort of modified birth pause for babies needing extra support at start-up, while ensuring access to necessary medical care.

In a situation where a vulnerable baby needs time-sensitive support, contemplating the baby's experience and offering a slow meeting between mother and baby may sound like the last question to consider. After all, a baby's survival trumps experience. But why can't we accommodate both? Researchers are looking at how stressful experiences during early critical periods of development may have the potential to affect human well-being over the long-run. A growing body of evidence suggests that it is time to move beyond commonly held beliefs that developing fetuses and newly-born babies are in a pre-learning, pre-memory, pre-significant relationship to their environment, existing in a bland zone of development until something, sometime, moves the baby online. Physicians, psychologists, therapists, neuroscientists, and geneticists say there is good evidence that much more is going on for babies, and what is occurring is meaningful (White & Rhodes, 2014).

Yet, considering the moment-to-moment experiences of fetuses and newly-born babies as potentially impactful is not part of the everyday thinking of most parents and medical professionals. At a birth I recently attended, a pediatrician conducted a particularly rough, fast exam on a newborn while the parents looked on with rising alarm. The baby hollered at top volume through the exam. "Don't worry," the pediatrician assured us, "he won't remember this." Likely the baby won't consciously recall this exam. But the doctor's rationale minimized the baby's distress and justified less-than-careful treatment. A greater appreciation of the importance of babies' experiences of their environments during the sensitive period around birth could inspire birth professionals to do all they can to support babies' experiences alongside necessary medical care, especially for babies like Rachel's son who have to cope with and recover from challenging births.

A nurse returned to reassure us that Rachel's son was doing well, with 7/8 Apgar scores and good color, but, she said, they would be sending him to the NICU for 24-hours due to an irregular heartbeat, slightly low oxygen saturation, some grunting, and general concerns given his dramatic birth. The nurse told us she would return in a while with the baby so Rachel could see him before he went to the NICU. Rachel and I hunkered down for more waiting. I remembered Karen Strange's tireless efforts to shift our thinking around the meaning of our earliest experiences, and her invitation to parents and care providers alike to slow down as we meet our babies, work that inspired me to dig into the research behind her teaching.

### **Babies Experiences: A Day with Karen Strange**

A year before Rachel and Jonathan's baby was born, I had dropped in to Karen's neonatal resuscitation workshop in Brooklyn for a refresher. The room was filled with midwives, nurses, and doulas. Karen began with the story of how her thinking has changed about the importance of our earliest experiences. After 10 years as a midwife at a high-volume birth center in Texas and a trainer for Neonatal Resuscitation Program, Karen opened a home birth practice in the Dallas area in 1996. Soon after, she said, she began to experience significant fear at her clients' births; as her client got close to delivery, a non-specific sense that something very bad was amidst would take hold of Karen. She felt she needed a break from attending births.

During her hiatus, Karen heard biologist, Bruce Lipton, and psychotherapist, Barbara Findeisen, give a talk on the impact of maternal stress on the developing fetus. Findeisen, founder of the STAR Foundation in Tucson, Arizona, shared her therapeutic successes working with adults with seemingly intractable difficulties by addressing trauma they had experienced before, during, or soon after they were born.

Findeisen, Karen recalled, spoke of our time in utero, our experiences of birth, and our experiences in infancy as a highly influential period in human development. Lipton described how we

now understand that, when a pregnant woman perceives a threat in her environment, real or imagined, the fight or flight stress hormones cortisol and epinephrine pass through the placenta and affect the same tissues and organs in the fetus as they do in the mother. As with the mother, Lipton explained, fetal blood flows away from internal organs as stress hormones suppress forebrain function, profoundly shaping the developing child's physiology. The fetus, then, is also having a direct experience of stress.

Findeisen suggested that the time a fetus spends in utero establishes a template according to the emotions of the mother. How the mother thinks about and makes sense of her larger world gives her developing child direct, embodied experiences of joy or stress, delight or worry, contentment or anxiety, in varying measure, as nature prepares this small being to best survive in the world. It is the same for giraffes, elephants, and people, Findeisen said.

Karen had never heard discussion of a baby in utero in such terms. "Why didn't I know about this?" she asked. "I mean, I knew it was good to rub your belly now and then, but I had never thought of this as a time of laying a foundation for the person."

For Karen, Findeisen's talk was pivotal, both personally and professionally. She immediately began to consider that perhaps some of the fear she was encountering as she attended births originated in her own earliest experiences. Karen's mother had lost a day-old baby two years before conceiving Karen. In spite of the counsel Karen's mother had been given to pretend that the birth and death of her child simply hadn't happened, Karen knew that her mother had deeply grieved the baby's death. Karen felt certain that she, as the next baby, had gestated in a sea of unspoken sadness, loss, grief, and fear. She realized this loss was not just a part of her family's history; it was part of her own story and experience.

Karen started going to births again while exploring the roots of her fear as a kind of implicit memory that was now surfacing. She began to think differently about the work she did training birth attendants to resuscitate newborns. She described feeling, "a huge drive to help people truly understand that babies need to be seen and heard, no matter the details of their arrival." She decided to make this her primary work.

The decades have passed and Karen has tramped back and forth across the country on this mission. Meanwhile, academic and clinical interest in the way our earliest experiences impact our lives has grown significantly. Psychiatrist, Dr. Thomas Verny, launched the study of prenatal and perinatal psychology, a multidisciplinary effort to understand "better than we ever have before all aspects of early human development" (Verny, n.d.). In medicine, a link established by David Barker in 1989 between low birth weight and heart disease later in life has led to numerous studies that connect fetal and early experiences to childhood and adult physical and mental health (Barker, Winter, Osmond, Margetts & Simmonds, 1989). Cancer, diabetes, obesity, osteoporosis, mood disorders, autism, and schizophrenia have been linked to pre- and perinatal influences (Schlotz & Phillips, 2009; Oken & Gillman, 2003; Osborne-Majnik, Fu, & Lane, 2013.) Annie Murphy Paul (2010) writes that this explosion of research on fetal origins is "prompting a revolutionary shift in thinking about where human qualities come from and when they begin to develop. It's turning pregnancy into a scientific frontier..."

The pioneers charting this frontier have been asking a fundamental question: "How?" How is it that experiences so early in life have the capacity to affect us for decades? Two fields in particular may have answers: genetics and neuroscience.

The impressive mapping of the human genome was a start (Lander, et al., 2001). We are now discovering how genes live in dynamic relationship with their environment. We have learned, for example, that the placenta-crossing, message-carrying maternal hormones of stress (or contentment, joy, satisfaction) may impact the developing fetus to the point of activating certain genes while suppressing others, genes that control susceptibility to disease and inclinations toward certain moods, behaviors, and personality traits that can last a lifetime.

Bruce Lipton (2005) describes how the emerging science of epigenetics now makes it clear that there are two mechanisms by which we express hereditary information: nature (genes) and nurture in the form of tags found within every cell that respond to environmental influences. These tags make up the epigenome, which can be thought of as a second genome. As Dr. Randy Jirrlte, Director

of the Epigenetics and Imprinting Laboratory at Duke University, describes it, “These tags can attach themselves to certain genes in order to shut them down, or they can grab the proteins around which genes coil and either tighten or loosen to control gene activity” (Barrantes, 2007).

### **Epigenetics: At Key Periods of Development, Experiences Matter**

There is still much to learn about how the epigenome functions. We know from developmental and behavioral neuroscience that the epigenome is sensitive to environmental influences throughout the lifespan, but the epigenome appears to be particularly responsive to the environment during gestation, the time around birth, early infancy, and adolescence (Carey, 2012). Harvard neurobiologist Michela Fagiolini and colleagues (2009) explain that the prenatal and postnatal periods for mammals are “critical windows” defined by rapid changes in neuronal organization. During this time, they says, “Environmental experiences can lead to long-term influences on brain and behavior.”

Over the last several years neurobiologists have been compiling empirical data in animal studies demonstrating how environmental influences during the time around birth produce lasting changes in gene expression. These changes have been shown to alter central nervous system genes that influence behavior in offspring and sometimes in offspring’s offspring (Caldji et al., 1998; Champagne, Francis, Mar, & Meaney, 2003; Weaver et al., 2004). In one study, researchers found that newborn rats who received lower quality maternal care after birth showed greater anxiety-like behavior and later parented their young in a similar style. Researchers showed that the quality of care following birth affected the expression of a gene linked to the stress response (Fish et al., 2004). In another study, researchers separated newborn mice from their mothers for a few hours a day over the first 10 days of life. The result was an increased stress response in the mice and depressive-like behavior as they matured. Researchers showed that disrupting attachment during the sensitive period following birth was sufficient to induce changes that alter hippocampus/pituitary axis activity (Murgtroyd et al., 2009).

And humans? Humans are hardy. The evidence is all around us in the mostly loving, fairly resilient, generally healthy, and affable adults who people our planet. Furthermore, stress is a normal and important part of humans’ (and all mammals’) experiences at all stages of life, including during gestation, birth, and infancy. Still, for all our hardiness, researchers have found that extremely stressful or traumatic experiences around the time of gestation, birth, and early infancy can increase the likelihood of challenges in years to come. For example, researchers found that fetuses at two months gestation when the 1967 Six-Day Israeli-Palestine war broke out were many times more likely to develop schizophrenia two decades later (Malaspina et al., 2008). Another study found that babies who experienced trauma at birth were more likely to engage in acts of violence later in life (Jacobson & Bygdeman, 1998), and others found that being mistreated in early childhood correlated with later diagnosis of adolescent and adulthood posttraumatic stress disorder and depression (Heim & Nemeroff, 2001; Kaufman, Plotsky, Nemeroff, & Charney, 2000).

What is the threshold separating normal stress from potentially damaging trauma in humans around the time of birth? We don’t know. But if experiences during the perinatal period have the potential to “profoundly alter development of the central nervous system to impart either risk for or resilience to later psychopathology,” as behavioral epigenetic specialists Roth and Sweatt write (2011), then there is no downside to minimizing stress for our babies around the time of birth. Offering our next generation their best shot at resilience is a worthy project.

When neuroscientists want to create stress in order to study its damaging effects on the developing newborn brain, researchers separate young mammals from their mothers. If we think humans are exempt from the impact of this disruption, we are wrong. Looking at the effects of mother-baby separation, researchers compared heart rate variability in two-day-old babies as they slept skin-to-skin with their mothers and when they slept alone in a crib. During the time the babies were separated from their mothers, the babies’ autonomic activity averaged 176 percent higher and quiet sleep 86 percent lower than when they slept skin-to-skin with their mothers (Morgan, Horn, & Bergman, 2011). Dr. John Krystal, Chairman of the Department of Psychiatry at Yale, commented on

the study's findings, "This study highlights the profound impact of maternal separation on the infant. We knew that this was stressful, but the current study suggests that this is a major physiologic stressor for the infant" ("Maternal separation stresses the baby," 2011).

This is precisely why posters listing the benefits of skin-to-skin contact between a mother and baby are a fixture in many labor and delivery rooms. And yet, the experience of a young couple, students of mine, who recently gave birth in a prestigious New York City hospital, is not unusual. Through their labor they noted the display of skin-to-skin posters and, following the birth, they were surprised by their nurses' insistence on separating the baby from his mother for routine newborn procedures (rather than accommodate the mother's request to hold the baby for procedures), and surprised again by the nurses' determination to take the baby to the well-baby nursery an hour later. The information was there, but practices did not reflect it.

While our institutions are making strides, there is work to be done to discover new routines of care for mothers and babies, especially when a baby arrives in a compromised state. If difficulties do occur, as they did for Rachel and Jonathan's son, how might we minimize the stress of separation and help babies recover?

### **Slowing Down For Vulnerable Babies**

"Babies are set to slow; their brains are six to 10 times slower than ours," Karen Strange said on that sunny Brooklyn day to the roomful of midwives, nurses, and doulas. "If we can ground ourselves and down-regulate our own autonomic nervous system," she said, "if we can move away from an activated, fast-moving internal rhythm to a slower, more-balanced state of being, this helps us establish a better connection with babies." And connecting with babies, she emphasized, helps babies stay current with what is happening in their environment. Why is this important? "Well," Karen explained, "one definition of trauma – which occurs to greater and lesser degrees —is that more is going on than we can integrate, more is happening than we can keep up with."

If a baby needs to be resuscitated at birth, she urged us to take a breath, talk to the baby, acknowledge what is happening, and reassure the baby. The challenge she put forward was to disengage from our faster, adrenalin-pumping internal pacing. "As you assist a baby's efforts to breathe," she said, "ground yourself and support the baby's experience. This is important at the birth of any child and critical at such charged times as a resuscitation."

Dr. Louis Pollack is a Seattle-based neonatologist with a reputation for doing things differently. For decades he worked, as he put it, at both extremes: in highly sophisticated medical facilities and, twice a year, in Ethiopian homes where he describes learning a huge amount from watching births unfold naturally and observing babies figure out how to survive. Attending almost 7,000 births over a 30-year career, he has come to a perspective that he describes as distinct from many of his colleagues: less is often more. "A lot of interventions are done with good intentions," he said, "but often they aren't substantiated by the data" (Pollack, personal communication, September 21, 2014).

With a term baby, whose heart rate is above 100 beats per minute and who is making spontaneous efforts at respiration, Dr. Pollack describes doing nothing. "It's normal," he said, "for babies to be born blue. It's normal for babies to take 60 to 90 seconds for cardio-pulmonary transition. What I do at these times is kind of a treatment for the person. I talk to the baby." Nurses who have watched Dr. Pollack through the years describe what he does as "verbal resuscitation." I asked Dr. Pollack what he says to babies in these moments. He laughed and replied, "Oh, I don't know! I tell the baby how beautiful he is. I say 'welcome to this world.' No one needs to tell a baby how to breathe. I assume the baby knows much more than I do. There wouldn't be seven billion of us here if this weren't true!"

When circumstances warrant, Dr. Pollack uses the panoply of medical tools. "Of course," he added, "if I have a 26-week-old baby, 800 grams, I pull out all the stops. But there are ways to treat babies more gently, even when intubating. There are benefits to minimizing the stress. And those who are the most sick, gain the most from being talked to and treated gently."

### **Difficulties Happen: It's All about Repair**

Karen Strange reminded her workshop participants that difficulties, separations, or disruptions in sequences happen; in fact, they are inevitable. “I don’t know anyone with the perfect birth, the perfect childhood, the perfect adolescence, and the perfect marriage,” she said. Perfect is not the point, she stressed. Repair is. It is the coming back, the finding of each other again, that mends the separations. When things go less than swimmingly for our babies and children, we slow down for the re-connection. It doesn’t matter if a child is still in utero, newly born, or heading off to college. It is what we do with and for our children day after day, year after year, and our relationships are stronger than if there had been no ruptures.

At birth, when a baby has a stressful experience, Karen said that repair will be found when mother and baby come together for a quiet, uninterrupted time where a baby is given the opportunity to do what she is born knowing how to do, bop and scooch her way to her mother’s breast. Karen emphasized that repair is possible no matter if the repair happens minutes, hours, or even days or weeks after the birth. This coming together of mother and baby, she said, is an opportunity to heal the separation of birth and any disruptions in sequences that may have followed the birth and it can happen at any time. “Repair,” she said, “is *always* possible.”

### **A Third Option for Rachel and Jonathan’s Son**

As she had promised, the nurse returned with Rachel and Jonathan’s baby for a visit on the way to the NICU. Rachel received her baby with delight. Almost immediately, the nurse began discussing what would happen in the NICU and Rachel and Jonathan turned their attention to her as she described the IV and other procedures that would be performed. I thought we would best seize the moment if Rachel and her son would only be together for a few minutes. I took a breath to slow myself and said hello to the baby, congratulating him on a safe arrival. As the conversation continued above us, I unwrapped the baby so that he was skin-to-skin with his mother. The newborn gazed at his mother with striking intensity. “Rachel,” I interrupted the nurse, “he’s looking right at you.” Rachel turned to her son and everything about her relaxed. She began talking to her little fellow. I asked if we could have a minute and the nurse obliged, stepping out of the room. The baby snuggled in and showed feeding cues. “The baby’s color is looking better by the minute,” I observed, “I wonder if someone can reevaluate the NICU decision.”

When the nurse came for the baby, Jonathan asked if a pediatrician could reassess the situation now that the baby had had time with his mother. Ten minutes later a neonatologist came to the room to check on the baby (the first time the midwife had seen a neonatologist visit a room to reevaluate a baby in her 30 years of practice). The baby’s heart sounded normal. His breathing was fine. Oxygen saturation was perfect. Blood sugar levels were superb. The baby would not be going to the NICU after all. Instead, he stayed cuddled to his mother’s body, concentrating alternately on his mother’s radiant face and sorting out the business of meals, feeling warmed, caressed, loved, and celebrated by his parents. One had to imagine rich repair was underway.

The care offered Rachel and Jonathan was excellent. The couple was grateful for the effort made to avoid a cesarean and appreciative of the staff’s willingness to revisit the NICU decision. But, following the birth, the default was to separate a vulnerable newborn from his mother. What if the care offered this baby had looked a little different? What if there had been a third option? What if, with the birth of this baby into that adrenalin-charged room, everyone had taken a breath and quieted as the baby was placed on a bed-side surface that allowed the baby to receive his iron-rich, oxygen-carrying cord blood? What if someone had spoken words of welcome, or told the baby how beautiful he was, even as medical care was offered? What if—in the space of this pause—Rachel had the moment she seemed to need to catch her breath following her efforts to birth her baby (remember her “I’m not ready”)? What if she and Jonathan had then reached out to soothe and speak to their son before them on this surface? And, as the baby stabilized, what if contact between mother and baby was prioritized and a NICU nurse or pediatric resident stood at Rachel’s side while Rachel held her baby skin-to-skin and she and her son breathed together?

As I stood at Rachel’s side, I wondered how the baby’s experience would have been different if the hospital had offered Rachel’s son a chance to recover from his birth in an atmosphere of human

connection. What if alongside the medical technology and expertise in that room, he recovered with the support of the placental transfusion; a warm, slow welcome from his parents followed by contact with his mother's body; and, one might guess, a felt sense of love? This modified birth pause would have minimized stress for an already stressed newborn and incorporated some of what we are learning about the importance of early experiences to help our next generation thrive, no matter the condition of arrival.

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