In this chapter I present an ethnographic analysis of birth in the context of biomedicine, technology, and the systems of logic that facilitate our beliefs in a medical interpretation of the birthing process. This is a journey directly into the heart of what Bourdieu (1990) calls the “logic of practice.” I examine the social production of this specific, practice-oriented logic as it is enacted in a large teaching hospital in the Southwest United States. I carried out ethnographic observations and practitioner interviews over three years with obstetricians, registered nurses, certified nurse midwives, and licensed midwives. I argue that through understanding the implementation of this particular medical technology, some processes which are fundamental to the acts of healing in general and childbirth in particular are clarified.

During the birth of each baby, with blood splattering the walls and mothers’ anguished cries resounding up and down the halls of the hospital, the consecutive steps of obstetrical practice are “logically” enacted. This is a logic of the moment, one that can take the practitioner through a multitude of situations. Its enactment is embodied in the pounding hearts and sweating hands of caregivers interacting with women and their unborn children. It is a logic examined before, during, and after the birth among colleagues and in the middle of the night when practitioners awaken in utter existential fear of possible negative physical outcomes and legal repercussions resulting from their actions. It is a logic that is inscribed and preserved in the cultural artifact of the paper “strips” of data that are generated by fetal monitors.

My focus is on the biomedical technology of electronic fetal monitoring (EFM) as it is used to assess both the woman and her unborn child during labor. The EFM strip (output) shows the fetal heart rate on one side while simultaneously marking the pattern of uterine contractions on the other side. Fetal monitors have been in use in most obstetrical clinics and hospitals in the United States since the 1970s. Before that time specially configured stethoscopes were used. Indeed, the use of fetal stethoscopes is still common among birth practitioners of all kinds who work in geographical areas or under licensures where continuous fetal monitoring is not required or is not desired. Monitors manufactured since the mid-1980s also come equipped with keyboards where vital signs, cervical dilation, medications administered, and maternal position changes are noted, as well as anything else that medical personnel think it is important to type onto the strip. Through critical understanding of the highly elaborated role of this particular technology, biomedically framed childbirth can be illuminated, challenged, and reformulated. This issue grows even more important as technologies such as the EFM are distributed transnationally to countries that lack the clinical infrastructure to support the high-tech biomedical interventions and protocols designed to enhance clinical outcomes (Good 1995).

In this chapter I employ Bourdieu’s logic of practice as a means of better understanding the enactment of specialized knowledge. Particularly I focus on his notion that events occur in a specific time sequence and at a particular tempo. Because of this, events need to be studied and represented in a way which preserves their progressive nature. The use of the EFM and its output, the EFM strips, provides a clear demonstration of this temporally situated, practice-oriented logic. I also present some diverse anthropological insights which I use to describe biomedically enacted childbirth in a manner which de-centers our culturally constructed/felt understandings of birth taking place in a hospital. Haraway’s (1991) notion of the cyborg is used to illuminate newly emerging configurations of human-machine interactions. In this case, those configurations include the interactions and interdependencies of mothers, babes, obstetrical practitioners, and the fetal monitoring equipment which links them together bodily and conceptually. Finally I discuss insights from Jackson’s (1989) exploration of divination and risk as it applies to monitoring, legal surveillance, and the influence of malpractice on practitioners’ ability to practice.

Employing these theories, we can begin to anthropologically address the use of biomedical technology in the highly complex context of the late twentieth century. I work through four steps inherent in the treatment process as it is contextualized in the social enactment of birth using biomedical technology. A wider application of these ideas to healing in general could provide interesting insight into the microprocesses of the enactment of biomedical power as well as resistance to the biomedical model. First, I explore the concept of temp in the practitioner-patient-technology interaction. The tempo of the healing treatment is created by the physiological status of the laboring...
woman and her unborn baby, the representation of their status by the EFM, and the interpretation of that status by medical practitioners on the basis of their accumulated knowledge. Thus this tempo is enacted in concert with the prosthetic technology of perception—the EFM. Second, I move on to ethnographically describe the embodied and emotional experience of perceiving the patient's status through the output of the EFM. Third, I describe how the process of birth is manipulated into a pathological state which can be "cured" by biomedical treatments. Finally, taking a broader perspective, I conclude that healing is an act which requires the existing technology of a given culture for its ability to divine the physiologically hidden as well as for the way in which it dictates and legitimizes the movements of practitioners as they seek to gain control over disruptive bodily processes.

Seen in this way, it becomes evident that in all healing events there is a common underlying structure of logic within which practitioners work. That structure is dictated by learned norms of the profession, be it biomedicine or shamanism, by the progressive sequence of change within physiological systems undergoing a stressful situation, and by the various technologies used to reveal the progression of events that practitioners seek to control through their various treatment regimens. As with all technologies used by healers (I wish to include non-biomedical practitioners and their technologies as well), the use of the EFM can only be challenged if its implementation is understood. In order to clarify its use I turn to an exploration of Bourdieu's (1990) *The Logic of Practice*.

**BOURDIEU'S LOGIC OF PRACTICE**

Bourdieu's logic of practice is founded on what he calls the "practical faith" which underlies the motives of specialists such as medical practitioners. "Doxa" for Bourdieu is the state of adhering to the act of practice so closely that reaction becomes unconscious and automatically enacted. The body thus enacts what it has memorized through cultural training. The focus for Bourdieu is on practice and how it is "logically" enacted. This is not the static logic of textbook logicians, but rather the play-by-play logic of events that are happening real-time. This is a way of understanding events moving at the tempo of the moment. It is the tempo—the rhythm, the accelerandos (accelerations), and the rallantandos (deaccelerations)—that provides the temporal framework for practitioners to make decisions and to carry out procedures. In the event of a normal labor and delivery, myriad physiological factors influence the rate of progression of the labor. These factors include the size of the baby, the strength of the uterine contractions, the position of the baby, and the size of the mother's pelvis. In the event of a pathophysiological state occurring during labor, such as preeclampsia (increased blood pressure which may lead to convulsions or coma) or chorioamnionitis (an infection in the uterus), the initial severity of the pathophysiological state and the rate of bodily deterioration thereafter provide the parameters of time within which practitioners must function.

Bourdieu warns against trying to collapse events situated in time into linear, static representations on paper. He insists that scholars try to maintain some sense of what an event was like as it was experienced embedded in time and movement. Practice is irreversible and non-synchronous—properties which endow it with specific meanings only at specific times. The concept of temporality and the enacting of decisions are important with regard to fetal monitoring. Bourdieu's notion of temporally situated logic gives anthropology a theoretical space in which to question what happens away from the textbooks that contain the codified knowledge and beyond the discourse of practitioners and patients regarding their perceptions of events, situating analysis in the treatment event itself. The strip emerging from the fetal monitor controls the tempo of access to information. It defines the acceptable rhythm of implementing treatment regimen. Birth becomes a performance of practitioner, mother, and babe on a stage with the constantly shifting scenery of the monitored fluctuations of the two physiological statuses. Medical anthropology is challenged here both in terms of capturing the event and of dealing with its ultimate textual representation, of describing the use of electronic fetal monitoring (EFM) in treatment events so as to reveal its logic of practice.

**TECHNOBIRTH AND THE LOGIC OF HEARTBEATS**

We (the nurses) come in the room and look at the monitor. Everyone is focused on the monitor. The father is focused on the monitor. The doctors come in and they look at the monitor. I think some doctors could identify the monitor strip and couldn't pick the woman out of a line-up.

— obstetrical R.N.

Haraway's (1991) "Cyborg Manifesto" provides insight into the universe of biomedicine peopled with both humans and machines. For Haraway the concept of the cyborg is the unity of human and machine with an ironic twist. Cyborgs are "creatures simultaneously animal and machine, who populate worlds ambiguously natural and crafted" (1991:149). While "hooked up" to the EFM, the mother and the fetus become merged with the machine in a bond which is only broken at the moment of birth. They become the cyborgs of technobirth, a collective of human and inhuman. Their functioning is welded into one conceptual unit.

The intimate world of life in the womb is transcribed into a visible form by the fetal monitor. Uterine activity is registered, as well as the mother's movements, breaths, coughs, and laughs which are inscribed in the bass clef to the
babe's soprano heartbeat on the "strip." The hidden is revealed. The revelation is read by biomedicine as a partial expression of Truth and is used as the basis for many medical decisions. The thin-lined cryptic scrawls that snake out of the monitor are late-twentieth-century hieroglyphics at their most ambiguous and most powerful.

The heartbeat and the uterine movements play the melody to the contrapuntal episodes of treatment that are written down by nurses and doctors. "Punched in" through keyboards which print out the actions as they are completed, the treatment regimens are permanently affixed in their exact temporal location with respect to the physiological functioning of the mother and her child. Point and counterpoint. A fugue. One follows another across the strip—the heartbeat, the mother's movements, the medical practitioners, and their interventions. The mother and the baby are interpreted through and with the machine; their functioning merges. They are "read" as one. They are controlled as one. Why is it that the biomedical process of birth has been elaborated in this manner?

While numerous studies have shown that continuous monitoring does not improve birth outcome (American College of Obstetrics and Gynecology 1995), it has become the standard of practice in most American hospitals to monitor the unborn child's heartbeat during labor and sometimes continuously for as many as fourteen weeks before birth. Fetal monitors were put into clinical use without being proven clinically effective (American College of Obstetrics and Gynecology 1995). Their widespread availability and their ability to penetrate the hidden world of the womb, making it accessible to practitioners, helped to firmly implant the monitors in obstetrical practice. Sandmire (1990) succinctly critiques the use of EFM from a biomedical standpoint, noting that obstetrical problems often result from the decreased maternal movement during labor necessitated by the monitor, as well as from the increased danger of infection that accompanies the use of the internal fetal monitor. While some practitioners and some pregnant women object to the use of fetal monitoring in particular situations for these and other reasons, many obstetrical treatments are based on interpretations of the EFM output. It provides more than an assurance that all is well with the fetus; it also provides the minute-by-minute feedback used to make obstetrical decisions regarding appropriate treatment protocols. In short, it has become an integral part of the habitus of obstetrics.

The use of the EFM is embedded within two sorts of logic. On the one hand, people respond to the output as a kind of text. The strips represent a linear logic which is permanent, ordered as to time, and portable for discussion throughout the obstetric unit, and for dissection in court. While EFM strips are used in obstetrical decision making as textual output, they also function as a form of media—as practice in action. As a visually oriented society we have come to understand the logic of life as much through abstract symbols and glaring visual juxtapositions as through carefully constructed texts. And so it is with the ongoing production of our symbolic representation of fetal life.

The output from EFMs visually rolls out of the monitor on strips of paper, and it is also projected onto screens throughout the labor and delivery unit for practitioners to view. The tracing inches across space in ghostly green lines vivid against the black screen. It moves, it must be alive. Heartbeats become miniature actors in the movie of Life that is showing long before the baby sees the light of day.

The experience of biomedical birth is not only grounded visually in the EFM, but the machine also constitutes an aural presence on the labor and delivery unit. The rhythm of the fetal heartbeat resounds in the labor room. The heartbeat accelerates, infection is inferred, antibiotics are given, surgical delivery is considered. The heartbeat falters, slowing after the contraction, struggling back up to its previous baseline after each contraction—read stress and distress. Oxygen is administered to the woman, maternal position is changed to optimize blood flow to the placenta, intravenous fluids are increased, practitioners reach up into the birth canal and scratch the baby's head to elicit an increase in heart rate response to assess physiological reserves. One hand on the abdomen, eyes on the monitor, ears tuned for arrhythmias, tachycardia (increased heart rate), bradycardia (decreased heart rate), practitioners assess the output as it is being produced simultaneously by machine and woman. In a tense situation the woman moves, the babe moves, and a mad dash is made to "find the heartbeat, get a pickup," adjust external monitors, place internal monitors. The tempo and the rhythm of birth are completely embedded in the sights and sound of the monitoring equipment. The monitor is more than an uncomfortable belt around the woman's waist. It is the biomedical birth practitioner's most relied-upon tool of assessment, favorite security blanket, and crystal ball, all rolled up into one.

Returning to Bourdieu's logic of practice, we see professionals in a thoroughly postmodern context. As healers, these obstetrical practitioners are responding through the learned obstetrical doxa which is reinforced judicially through malpractice lawsuits. Practitioners are responding not only to their human patient but also to the monitor as it represents the patient. They are responding to the unity, to the cyborg. The body hexis of practitioners is performed to the rhythm of the electronically reproduced sound of the mathematically interpolated heartbeats. Appropriate treatment with respect to learned doxa changes quickly. In a matter of seconds a different treatment can be indicated. Practitioners, fetus, pregnant woman, and the electronic fetal monitor are wet-wired, fused into an amalgamation of physiological functions, specialized professional knowledge, and deeply embodied experience. Biological perceptions merge with virtual reality, and the cyborg is performed.
The scenario is a common one: the laboring woman is resting in a hospital bed, monitor on, fetal heart tones thump, thumping. No one else is in the room. Out at the nurses’ station a group of nurses and doctors stand around chatting, frequently glancing at the monitor screen. A “severe” deceleration of the fetal heart rate is noted. Immediately several practitioners rush toward the patient’s room. The door flies open. Doctors and nurses begin treatments based on previously established protocols. Adrenaline pumping, they perform vaginal exams to check for a possible prolapsed umbilical cord, change the mother’s position to maximize blood flow to the uterus, place internal monitors for increased accuracy of pickup as well as a host of other actions. If none of these measures is effective at restoring a normal fetal heart rate, an emergency surgical delivery is performed. The esprit de corps and sense of the heroic should not be underestimated if the heartbeat returns to normal—which it most likely would have done without any of these procedures. A deceleration that practitioners would consider to be “severe” could mean a medical emergency, as in the case of a prolapsed umbilical cord. In the majority of cases, however, the deceleration does not indicate a medical emergency and in some cases it may just be a regular rate fluctuation. The laboring woman is then once again left alone as the practitioners retreat out of the room. Accurate and controllable surveillance becomes a practical necessity for the enactment of obstetrical doxa.

Complete surveillance is also mandated by law for practitioners who want to work with women giving birth (see Schifrin, Weissman, and Wiley 1985). Standards of care are established via the EFM machine, and thus in the never-quite-sure realm of birth, each time a delivery occurs outside the monitor’s panoptical eye, whether it occurs in the hospital without the EFM or in the home, the legal and monetary risk to the practitioner is exponentially increased. Foucault’s panopticon is an apt metaphor for the use of the EFM with respect both to the surveillance of the laboring woman and the legal monitoring of the practitioners. Fetal heart tones are visually projected all over the obstetrical unit on screens and audibly projected up and down the halls if the volume is turned up on the monitor. They are also projected into doctor’s offices across the city and into doctor’s homes which are hooked up to remote screens. Maternal movement is restricted in order to produce the clearest and most interpretable strip. When the woman is attached to the EFM, she is belted into bed, strapped into place. While many women who give birth in the hospital want to be in bed so that they can receive intravenous pain medications or epidural anesthesia, some women find lying down extremely uncomfortable. Motion on the part of the normal, healthy mother is not allowed—it is “interference,” it is “noise.” If the mother should try to move, the strip will show that motion and a nurse or physician will look into the room to make sure the unwarranted movement is stopped. If there is too much of this non-sanctioned movement, the “strip” will not be “interpretable” either now or, should the occasion arise, in the courtroom. The courtroom is the ultimate exposition of the strip; in the case of poor physical outcomes, it is the strip’s ultimate destination. Those practitioners who didn’t exercise enough control have to pay up. The “strip” is often an important part of the legal argument and the basis of multimillion-dollar settlements (Ennis and Vincent 1990). It is used in at least 50 percent of all obstetrical court cases (Sandmire 1990:131). It is a part of the permanent medical record. The use of EFM technology is embedded within the legal system as well as within the biomedical system.

After “emergency” scenarios such as the one described above, women become docile—after all, they never know when the practitioners might all of a sudden detect a change in the heart rate which might necessitate immediate attention. Like Foucault’s description of the prisoners who stopped rebelling because they believed they were being watched, even when they weren’t, these women remain in the “correct” position for hours at a time. They have been effectively reconstituted in what Davis-Floyd (1992) calls the technocratic model of birth. Simultaneously, practitioners are constrained in their scope of practice in that they must respond to the EFM output in the accepted manner or face legal sanctions. Practitioners are also working under the watchful eye of the panopticon.

**BIOMEDICAL IDEOLOGY IN THE INSTITUTIONAL CONTEXT**

From a legal point of view, there’s nothing more incriminating than a monitor strip because you can read it any old way. In retrospect when you get a baby that didn’t do well you can almost always look back on the strip and see something questionable. The lawyer will say, “Hey! Why didn’t you do something here?”

—R.N.

A pathological conceptualization of birth necessitates a reinterpretation of what is “natural” and a reevaluation of outcomes. Willis argues: “One of the most important general functions of ideology is the way in which it turns uncertain and fragile cultural resolutions and outcomes into a pervasive naturalism” (1977:162). This is a process that reproduces class ideologies among groups of individuals as they are contextualized within institutions. While obstetrical practitioners have some insight into the processes of the biomedical institution and their relations with it as workers, their continued practice within that framework demands that they take on a viewpoint which is consistent with a medically interpreted notion of what constitutes a “normal delivery”—that is, one which is carried out under the auspices of medical per-
Techniques of normalization discussed by Foucault (1990:141) within the realm of bio-power include a set of material elements that serve as weapons, relays, communication routes, and supports for the power and knowledge relations that invest human bodies with meaning and subjugate them by turning them into objects of knowledge. Rabinow (1984:21) discusses the Foucaultian idea of technologies of normalization as they play a key role in the systematic creation, classification, and control of anomalies in the social body. They perform various functions, serving to isolate anomalies and to normalize anomalies through corrective procedures determined by other related technologies. EFM performs these same functions, first through recording heartbeat patterns, then through deeming certain fetal heart rate tracings possibly anomalous and/or pathological. Fetal heartbeat patterns are recorded in a linear fashion alongside a graphic representation of the duration and intensity of uterine contractions. The response of the fetal heart rate to the compression caused by the uterus may be to accelerate, to stay the same, or to decelerate. Particular patterns of decelerations and/or lack of accelerations are hypothesized to reflect a "negative physiological status" in the fetus. Davis-Floyd describes how the technocratic model of birth results from first deconstructing the natural process of birth and then dissecting it into components which can be measured, manipulated, and reconstructed through the use of various technologies (See Introduction 1994:1127). Fetal heart tracings show how obstetrical biopower is reckoned through perceptual penetration and control.

Translating the Strip: Treatment and the Desire to Render Visible

The monitor gives these women a false sense of security... it's like because they're on the monitor, this monitor is somehow magical and it's going to make their baby be OK. But by doing that, it's like they're giving away another segment of their power to this machine. This machine has no power to make their baby be OK. Just as many babies have bad outcomes with these monitors as without them. But the women don't understand that. They think somehow because we all stare at it so much that somehow it's going to protect their baby. It's not.

—Obstetrical R.N./Licensed Midwife

Practitioners spend a great deal of time focused on the "strips" of paper output emerging from the fetal monitors. Because these strips are both medical and legal documents, they must be carefully crafted by the practitioners. Great care is taken to punch in data via the keyboards so that they reflect current protocols and appropriate actions. The inappropriate is not recorded. The control granted to biomedical practitioners is reinforced by their function as translators of the fetal status via these "strips." Power produces and reproduces biomedical ideology and knowledge in a reciprocal relationship. As practitioners stand around monitors in the patient's room or study the screens which project the images of the EFM throughout the obstetrical unit, they talk about the quality of the strip: "We need to see some accelerations (of fetal heart-tones)" and "If this strip doesn't start to look better we're going to need to consider a c-section"—are typical practitioner observations. It is the strip, at least in part, that needs to be cured.

Beyond the obvious role of recording events, the strip is used to justify interventions and non-interventions. If a practitioner feels it is appropriate to delay a surgical delivery, but the strip is non-reactive (without heartbeat accelerations of standard increases in speed and duration), the physician may try to elicit the accelerations using various techniques—through manually scratching the top of the baby's head by reaching up into the vagina, through maternal position changes, or by using an electronic device which sends sound waves through the mother's abdomen which startle the baby, with a concomitant increase in heart rate expected. These measures do not positively affect the baby's physiological status; they serve only to document that the baby has sufficient physical resources and neurological intactness to respond to stress. Through increased risk of infection from manual examination they increase the likelihood of infection entering the uterus. And they may well negatively affect the baby's psychological and emotional status (Chamberlain and Arms 1995; see also Chamberlain, this volume).

The physician has diagnosed the anomaly—in this case it is "non-reactivity"—and has gained agency over it by producing fetal heart rate accelerations. This is then documented on the monitor strip. If the strip "looks good," yet the delivery results in a fetal demise, the practitioners are all in a much better legal position than if the strip didn't meet normal criteria. Often completely healthy babies are born who have "abnormal-looking" strips before delivery and vice versa. In didactic learning seminars for obstetrical residents and nurses, attending physicians will often show a particularly bad strip to first-year interns and ask what they think the fetal outcome was. Interns inevitably give their dire predictions. The attending physicians then either confirm the prediction or state that the baby was fine, much to everyone's amazement.

Practitioners processuallv and publically learn the doxa of strip interpretation. Consensus is important (Grant 1991). The ambiguity of the heart rate tracings makes interpretation an important clinically learned skill for the obstetrical staff of nurses and doctors who use it on a daily basis. It takes a great deal of authority to enact the logic of practice in a way which is constrained by the strip. Defensive medicine is practiced and documented. Its enactment may be beneficial and/or detrimental to the health of the moth-
er and babe. The difficulties inherent in using the full extent of professionally and legally mandated diagnostics while weighing the risks and benefits of these technologies constitute a tightrope that conscientious practitioners walk every day.

**DIVINATION AND RISK**

If I had to predict that kid's future from that strip, well, he may not go to Harvard.

—Attending Obstetrical M.D.

. . . there is a threshold of tolerance beyond which chance ceases to be a matter of risk willingly taken and becomes an external tyranny to be desperately avoided.


It is chance which modern obstetrics wishes to reduce. By treating the mother and the unborn child via the monitor strip, biomedical practitioners seek to reduce both the biological risk of negative obstetrical outcomes and the legal risk of repercussions surrounding less than optimal outcomes. As Schifrin et al. state in the journal *Law, Medicine and Health Care*:

What the physician decides to do is less important than how he or she goes about making that decision. A doctor who commits his or her interpretation and plan to the medical record is much less likely to be sued successfully, regardless of the accuracy of the assessment of the fetal monitor tracing. It is the reasonable (but not necessarily accurate) interpretation of the tracing, combined with a reasonable (but not necessarily correct) plan of action, that is crucial, both for successful patient care and for a successful legal defense. (1985:103)

Despite the fact that studies have shown no reduction in birth morbidity and mortality, the use of this monitoring equipment is considered to be the "safest" manner in which to carry out the birthing process and therefore is the basis of how biomedical practitioners in the United States are trained and how they subsequently practice. As in the case of divination described by Jackson (1989), the act of culturally reducing risks gives us a way of going forward with the activity in the face of much unpredictability. Precision results in an "abreaction of anxiety," and the uncertain future is transformed into the past which is "a source of knowledge and the domain of certitude" (Jackson 1989:60).

Jackson goes on to argue that the benefits derived from divination are so great at the time of the divination that their ultimate "truth" is rarely called into question. So goes the biomedical art of strip interpretation. Embedded into the spaces between fiercely painful contractions, decisions made by practitioners and enacted on women are of-the-moment. These decisions will be strung together and given meaning through the telling and retelling of the birth story as practitioners recount events to other practitioners at case reviews and as the mother recounts events to her friends and family. The same monitor output could be used to justify a surgical delivery or a normal vaginal birth. Fetal heart rate tracings are usually too ambiguous to be read as absolute indicators, but their interpretive potential is virtually limitless.

When we examine the great variety of ways in which science and divination alike introduce a semblance of order and system into an uncertain universe, it begins to look as if establishing the "truth" of science or of divination in terms of some notion that the systems correspond to external reality is not necessary in order for these systems to help us cope with life and make it meaningful (Jackson 1989:66). The mysteries inherent in the process of the physiological functioning of the body in general and in the process of birthing in particular provide ample instances of practitioners trying to reduce the risk of the death of a mother and/or her babe in the face of not really knowing what is going on. Making a diagnosis based upon the EFM tracing, among other clinical factors, in some measure is an abreaction of the immediate anxiety, an accepted manner of obstetrical treatment, and a way to make the situation meaningful, both at the time of diagnosis and in retrospect.

**CONCLUSION**

As medical anthropology spirals further and further into the exploration of healing processes, the universe to be explored becomes increasingly complex. Beyond the names of medicinal plants and the words to curing songs, anthropologists are recognizing that the intricacies of practitioner and patient interactions are situated in biological and social time. It is the interaction that heals. The EFM strip provides an artifact—an artifact of the seconds that pass by, of physiological functions, and of the calculated interventions of biomedical practitioners. Obstetrical practice and the technology of fetal monitoring show Bourdieu's notion of the tempo of practice being played out simultaneously in realities both biological and social. Oddly enough, it is in the world of high tech where this process is charted most clearly and simply, as evidenced by the paper strips rolling out of the monitors. But a vague representation of the real complexity of the healing event, the fetal monitoring record reminds us of the magically progressive interaction between bodies and those who seek to heal them. It would be profitable in future studies of a wide variety of birth practitioners to give further attention to: (1) the tempo of events during labor and delivery (see Szurek 1997); (2) the technologies/techniques of perceptions used to make clinical observations of physiological, emotional,
and spiritual changes in the mother and babe; and (3) the interventions implemented by the practitioners.

As Pratt (1985) points out, personal and scientific authority weaves in and out of ethnographies and travelogues alike. Historically, ethnographies have been conceived of as "highly textured totalizing picture(s) anchored in ethnographers where 'self' is understood not as a monolithic scientist-observer, but as a multifaceted entity who participates, observes, and writes from multiple, constantly shifting positions" (Pratt 1985:39). In this chapter, it is from this shifting, albeit highly reflexive, position that I write. I am an obstetrical R. N. As both a medical practitioner and an anthropologist, I find myself moving back and forth between the epistemological dialects of practice and reflection. From an anthropological perspective my years of obstetrical experience have given me a deeply participatory reading of what it means to be a practitioner of biomedicine. As an anthropologist I take inspiration from Jackson’s view of fieldwork:

It is the interaction between the observer and observed which is crucial. . . . To desist from taking notes, to listen, watch, smell, touch, dance, learn to cook, make mats, light a fire, farm—such practical and social skills should be as constitutive of our understanding as verbal states and espoused beliefs. (1989:9)

As I spend hours and hours on the labor and delivery ward watching and recording the output from the EFM while coaching women through contractions, I too am immersed in the cyborg. My heart skips beats when the fetal tracing slows to very low levels. My ears and eyes are constantly alert for possible decelerations. Split-second falterings, if repeated in a particular way, make me more attentive, make me watch for other signs such as bleeding or imminent birth. Intuition via the sounds of the heartbeats, the placement of heart rate changes, or the overall forms of the linear representations of heartbeats and contractions in the context of all the other physiological and psychological factors can either reassure me or induce me to call another nurse or an obstetrician. Often this sort of knowledge comes from the day-to-day enactment of biomedicob obstetrics. In their study of postmodern midwives, Davis-Floyd and Davis (1996:6) point out that intuition is perceived as a "viable and valid source of authoritative knowledge" among a large number of midwives with whom they spoke. The changes in the mother and baby that my colleagues and I notice are often not clearly discernible on the "strip." They reside in a complexity of information that has yet to be represented as output from any sort of machine.

From my constantly shifting position, I have tried to expand the notion of the logic of practice to include specific attention to tempo and to allow for the incorporation of new information that is constantly being added, embodied, and acted upon in concert with a rapidly expanding repertoire of increasingly sentient technologies. As healers in the late twentieth century, we are called upon to practice in a universe of often incomprehensible technologies and fearsome litigation. As a biomedical team of doctors, nurses, certified nurse midwives, and nurse practitioners, we respond, often with surprising synchronicity, to the information displayed on the EFM. Obstetrical doxa is our infrastructure, and the monitor is an integral part of our habitus. Intuition and divination meet the cyborg, and new modes of interaction surround the process of birth. As anthropology challenges and clarifies the experiences of women giving birth in the institutional setting, biomedicine can continue to envision a new and better future by being sensitive to the negative as well as to the positive side effects of the cyborgification of mother and child.

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